

CANADA

---

REPORT

OF THE

MINISTER OF PUBLIC WORKS

ON THE

WORKS UNDER HIS CONTROL

FOR THE FISCAL YEAR ENDED JUNE 30

1904

SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 36  
SECTION 37, OF THE REVISED STATUTES OF CANADA

*PRINTED BY ORDER OF PARLIAMENT*



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST  
EXCELLENT MAJESTY

1905



*To His Excellency the Right Honourable Sir Albert Henry George, Earl Grey, G.C.M.G.,  
&c., &c., Governor General of Canada.*

MY LORD,

I have the honour to lay before Your Excellency the Report of the Department of Public Works of Canada, for the Fiscal Year ended June 30, 1904.

I have the honour to be,

My Lord,

Your Excellency's most obedient servant,

CHAS. S. HYMAN,

*Acting Minister of Public Works.*

OTTAWA, February 6, 1905.





## CONTENTS

Part	I.—DEPUTY MINISTER'S REPORT.
"	II.—ACCOUNTANTS' REPORT.
"	III.—CHIEF ARCHITECT'S REPORT.
"	IV.—CHIEF ENGINEER'S REPORT
"	IV.—APPENDIX. ST. LAWRENCE RIVER SHIP CHANNEL.
"	V.—GENERAL SUPT. OF TELEGRAPHS' REPORT.
"	VI.—COLLECTOR OF REVENUES REPORT.
"	VII.—MISCELLANEOUS REPORTS.



## ALPHABETICAL INDEX TO REPORT

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>A</b>							
Abbots Harbour, N.S.		14		6			
Abrams River, N.S.		14		7			
Accountant's report	5	1					
Acton Vale, P.Q., public building		8	8				
Acts of Parliament							19
Agassiz, B.C., Expl. farm		12, 33					
Agency Public Works, B.C.		27					
Alameda, N.W.T., lands office		32					
Alberni-Cape Beale, telegraph		26			17, 38		
Alberni-Clayoquot		26			16, 38		
Alexandria, Ont., public building		9	12				
Alma, N.B.		18		103			
Almonte, Ont., public building		9, 29					
Amaguanus, N.S.		14		7			
Amherstburg, Ont., dredging		22					
" " public building		9, 29					
Amherst, N.S., "		8, 28					
Amherst, P.Q.		20		104			
Anderson Lake, B.C.		24		168			
Anderson's Hollow, N.B.		17		77			
Annapolis, N.S., public building		8, 28					
Anse-à-Beaufils, P.Q.		18, 19		104			
Anse-à-l'Eau, P.Q.		21		139			
Anse-aux-Gascons, P.Q.		18		104			
Anse-au-Grip-Fonds, P.Q.		18		113			
Anse-aux-Foins, P.Q.		21		132			
Anse-St-Jean, P.Q.		18		105			
Anticosti-Gaspé, telegraph		25			9, 24		
Antigonish, N.S., public building		8, 28					
Architect's report	14		1				
" staff		27					
Arichat, N.S., public building		8, 28					
Arisaig, N.S.		14		7			
Arnolds Point, N.S.		14		34			
Arnprior, Ont., public building		9, 30					
Arrow Lakes, B.C.		24					
Art Gallery, Ottawa		10, 30					23
Ashcroft-Dawson, telegraph		26					
Atkins Shore, P.E.I.				69			
Atlin, B.C., post office		12, 33					
Atlinto, B.C.		24					
Aylmer, P.Q., public building		8, 29					
<b>B</b>							
Babbins Cove, N.S.		14		8			
Baddeck, N.S., public building		8, 28					
Baie St. Paul, P.Q.		18		105			
Baie des Rochers, P.Q.		18					
Bailey Brook, N.S.		14		8			
Barachois de Malbaie, P.Q.		18					
Barrie, Ont., public building		9, 30					
" wharf		22		141			
Barrington, N.S.		14		177			
Barry's Bay, Ont.		22					
Bathurst, N.B., public building		8, 28					

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>B</b>							
Battleford, N.W.T., public building		12					
" bridge		25		251			
Bay View, P.E.I.		16		70			
Bay Fortune, P.E.I.		16					
Bay of Fundy, telegraph		25			10, 29		
Bayfield, N.S.		14		9			
Bay du Vin, N.B.		17					
Bayfield, Ont.		22		142			
Beach Point, P.E.I.		16		70			
Beaverton, Ont.		22					
Beauharnois, P.Q.		18		211			
Belfast Pier, P.E.I.		16		179			
Belle Isle, telegraph		25			14		
Belleville, Ont., public building		9, 30					
Bellevue, N.B.		17		78			
Belœil, P.Q., slides and booms		18, 24		105			
Belyeas, N.B.		18					
Belyeas Cove, N.B.		18					
Benoit Cove, N.S.		14		10			
Bergeronnes, P.Q.		18		106			
Berlin, Ont., public building		9, 30					
Bersiamis, P.Q., telegraph		25			12		
Berthier (en haut), P.Q.		18					
" (en bas), "		18		106			
Berthierville, P.Q., public building		8, 29					
Bic, P.Q.		18					
Big Harbour, N.S.				10			
Big Pond, N.S.		14		11			
Black Brook, N.B.		17		79			
Black River, slides and booms		24		242			
Blanche Shoals		20					
Blind River, Ont.		22		142			
Bonaventure East, P.Q.		19		107			
Bon Désir, P.Q.		20		107			
Bois Brûlé, P.Q.		18		106			
Boucherville, P.Q.		19					
Boularderie Centre, N.S.		14		11			
Bowmanville, Ont.		22		143			
" public building		9	12				
Bracebridge, Ont.		22		143			
Brampton, public building		9, 30					
Brandon, Man.		11, 31	21				
" Expl. Farm		11, 31					
Brantford, Ont., public building		9, 30	12				
Breton Cove, N.S.		14		12			
Brideburg, Ont., public building		9					
Bridgeport, N.S.		14		33			
Bridges and roads		25		249			
Bridgewater, N.S., public building		7					
British Columbia, dredging		24		236			
" dredging plant				236			
" expenditure		27					
" harbours and rivers		9, 24		168			
" public buildings		12, 33					
" telegraphs		26			16, 37		
Brockville, Ont., public building		9, 30					
" drill shed		9					
" harbour		22					
Bronte, Ont.		22		143			
Browns' Flats, Ont.		18					
Bruce Mines, Ont.		22					
Buckingham, P.Q., public building		8, 29					
Buctouche, N.B.		17		80			
Burk's Falls, Ont.		22		143			
Burlington Channel, Ont.		22		144, 215			
Burnt Church, N.B.		17		80			
Burton, N.B.		18					

## SESSIONAL PAPER No. 19

Names of Places, &c.	Part 1. Page	Part 2. Page	Part 3. Page	Part 4. Page	Part 5. Page	Part 6. Page	Part 7. Page
Cable Ship "Tyrian".....	16	25					
Cable telegraph tariff.....		19		107			
Cacouna, P.Q.....		12, 32					
Calgary, N.W.T., public buildings.....		25		250			
" " bridge.....		29		211			
Calumet, P.Q.....		16					
Campbell's Cove, P.E.I.....		17		81			
Campbellton, N.B.....		7					
Campbellton, N.B., public building.....		17		103			
Campobello, N.B.....		20					
Cape Blanc, P.Q.....		20		104			
Cape Cove, P.Q.....		26					
Cape Beale, B.C., telegraph.....		25			6, 26		
Cape Breton, N.S.....		19, 20		107			
Cap de la Madeleine, P.Q.....		20					
Cap Rouge, P.Q.....		20		107			
Cap Desrosiers, P.Q.....		25			23		
Cape Ray, telegraph.....		17		81			
Cape Tormentine, N.B.....		19		131			
Caplan, P.Q.....		19		107			
Cap Santé, P.Q.....		17		83, 179			
Caraquet, N.B.....							
Caretakers, &c.....		14		12			
Cariboo Islands, N.S.....		7, 28					
Carleton, N.B., public building.....		9, 30					
Carleton Place, Ont., public building.....		12, 32					
Carnduff, N.W.T., public building.....		16		70			
Cascumpec, P.E.I.....		16					
Cattle quarantines, N.W.T.....		10, 30					
Cayuga, Ont., public building.....		18					
Cedars, N.B.....		19		125			
Cedars, P.Q.....		26		252			
Cement laboratory.....	16	19					
Charette, Joseph, gratuity.....		19		107			
Chambord, P.Q.....		19		108			
Champlain, P.Q.....		7, 28	7				
Charlottetown, P.E.I., public building.....		8, 28					
Chatham, N.B., public building.....		17					
" " harbour.....		10, 30					
" " Ont., public building.....		19					
Chateau Richer, P.Q.....		25		240			
Chaudière bridge, Ottawa.....		14		12			
Chebogue, N.S.....		14		13			
Cheggoggin, N.S.....		24					
Cheneaux booms.....		14					
Cheticamp, N.S.....		25					
" " telegraph.....		14		13, 178			
" " Point, N.S.....		14		14			
Cheverie, N.S.....		19		108			
Chicoutimi, P.Q., wharf.....		1					
Chief Accountant, report.....		14	1				
Chief Architect, report.....		27					
" " staff.....		7		1			
Chief Engineer, report.....		26					
" " staff.....							
Chief Officers.....		16		71			
China Point, P.E.I.....		19		83			
Chockfish, N.B.....		20		110			
Chlorydornes, P.Q.....		22		144			
Christian Island, Ont.....		14		15			
Church Point, N.S.....		14		27			
Chutes Cove, N.S.....		21		110			
Clarks City, P.Q.....		13					
Clerks of Works, salaries.....		17, 18		84			
Clifton, N.B.....		10, 30					
Clinton, Ont., public building.....		8, 29					
Coaticook, P.Q.....		20					
Cobb Island, P.Q.....							

Names of Places, &c.	Part 1. Page.	Part 2. Page.	Part 3. Page.	Part 4. Page.	Part 5. Page.	Part 6. Page.	Part 7. Page.
<b>C</b>							
Cobourg, Ont., public buildings.....		10, 30	13				
" harbour.....		22		115			
Cocagne, N.B.....		17					
Cockburn Island, Ont.....		22					
Colborne, Ont.....		22		159			
Cole's Island, N.B.....		18					
Collector of Revenue.....					1		
Collection of Slides and Booms dues.....		24			3		
Collingwood, Ont.....		22		145, 215			
Columbia River, B.C.....		24		168			
Contracts let, &c.....	16						6
Cornwall, Ont., public building.....		10, 30					
" harbour.....		22					
Correspondence, official.....							43
Coteau Landing, P.Q.....		19		211			
Coteau du Lac, P.Q.....		19		110			
Coulange River, slides, &c.....		24		242			
Courthouse, N.B.....		18					
Cove Head, P.E.I.....		16		71			
Cow Bay, N.S.....		14		15			
Craik, N.W.T., immig. shed.....		16					
Crane Island, P.Q.....		19		111			
Crapaud, P.E.I.....		16		76			
Crossed timber.....	7						
Cross Point, P.Q.....		19		85			
Cumberland, Ont.....	22						
<b>D</b>							
Dalhousie, N.B., public building.....		8, 28					
" harbour.....		19					
Dartmouth, N.S., public building.....		7, 28					
Dauphin, Man., immigration shed.....		11, 32					
Davidson, N.W.T.....		12					
Dawson, telegraph.....		26					
Departmental photographer.....		27					
Depot Harbour, Ont.....		22		146			
Deputy Minister's report.....	1						
Descente des Femmes, P.Q.....		19		117			
Deschambault, P.Q.....		19		111			
Descousse, N.S.....		14		16			
Deseronto, Ont., public building.....		10, 30					
Desjardins, P.Q.....		19					
Des Joachims bridge.....		25		250			
Devil's Island, N.S.....		14		17			
Didsbury, N.W.T., immigration building.....		32					
Digby, N.S., harbour.....		14		17			
" public building.....		7, 31					
Dipper Harbour, N.B.....		17					
Dominion public buildings.....		7, 28	3				
Donalds Head, N.S.....		14		20			
Doucet's Landing, P.Q.....		19		212			
Douglstown, P.Q.....		19					
Dredges and plant.....		24		181			
Dredging, British Columbia.....		24		236			
" Manitoba.....		23		232			
" Maritime provinces.....		14					
" New Brunswick.....		17		179			
" Nova Scotia.....		14		177			
" Ontario.....		22		215			
" Operations.....	12			176			
" Plant, names, &c.....	12						
" Prince Edward Island.....		16		179			
" Quebec.....		18		211			
" St. Lawrence River.....		20		282			
Drum Head, N.S.....		14		20			
Drummondville, P.Q., public building.....		8, 29					
Dry Docks.....				238		6, 13	

## SESSIONAL PAPER No. 19

Names of Places, &c.	Part 1. Page.	Part 2. Page.	Part 3. Page.	Part 4. Page.	Part 5. Page.	Part 6. Page.	Part 7. Page.
<b>D</b>							
Duck Lake, N.W.T., immigration bldg.		12					
Dumoine River, slides		24		243			
Duncan River, B.C.		24		171			
Dundas, Ont., public building		10, 30					
Dundee, P.Q., custom house		8, 29					
Dumbains, N.B.		18					
<b>E</b>							
East Bay, N.S.		14		20			
East Berlin, N.S.		14		21			
East Chezzetcook, N.S.		14					
East Jeddore, N.S.		14		21			
East River, N.S.		14					
East Templeton, P.Q.		19					
East Selkirk, Man., immigration building		11					
Eboulements, P.Q.		19					
Echouries, P.Q.				111			
Economy, N.S.		14		21			
Edgetts Landing, N.B.		17		85			
Edmonton, N.W.T., bridge		25		250			
" public buildings		12, 32			15		
Edmundston, N.B.		19		99			
Employees, graving docks							33
" salaries of		27					
" slides and booms							29
Engineers, firemen, &c.							35
Engineer (chief) report	7			1			
" staff (salaries) &c.		27					
English River, P.Q.		19		132			
Escoumains, P.Q.		19		117			
Escuminac, N.B., telegraph		25			10		
Esquimalt, B.C., graving dock		24		238		6, 13	
" custom house		37					
Expenditure	4	23			20		
<b>F</b>							
Fairford River, Man.				166			
Farnham, P.Q., public building		9, 29					
Father Point, P.Q.		19		111			
Finlay's Point, N.S.		14		22			
Five Islands, N.S.		14		22			
Flewelling, N.B.		18					
Flints Landing, P.Q.		22					
Fort Dufferin, N.B.		18		85			
Fort Lorne, N.S.		14		23			
Fort William, Ont., public building		10, 30					
" dredging				216			
Fraser River, B.C.		24		171			
Fraserville, P.Q., public building		8, 29					
Fredericton, N.B.		8, 28	4				
Frenchmen's Bay, Ont.		23		156			
Friar's Head, N.S.		14		23			
Fruids Point, N.S.		14		23			
<b>G</b>							
Gabus, N.S.				24			
Gagetown, N.B.		17		179			
Galt, Ont., public building		10, 30					
Gananoque, Ont., public building		10, 30					
" harbour		22		216			
Gaspereau, P.E.I.		16					
Gatineau River, slide		24		241			
" P.Q.		19					
Georgeville, P.Q.		19		112			
" N.S.		14		24			

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>G</b>							
Georgian Bay, Ont. ....		22					
" Canal survey.....	10						
Gimli, Man.....		23		166			
Goderich, Ont., harbour .....		22		146			
" public building .....		10, 30					
Golden, Windermere, telegraph .....		26			17, 39		
Gores Landing, Ont. ....		22		147			
Graham, P.Q. ....		19		212			
Graham's Pond, P.E.I. ....				72			
Granby, P.Q., public building .....		9, 29					
Grand Bend, Ont. ....		22		147			
Grande Anse, N.B. ....		17		86			
Grandes Bergeronnes, P.Q. ....		19, 20		112			
Grande Décharge, P.Q. ....		19		115			
Grand Entry, P.Q. ....		20		112			
Grand Etang, N.S. ....		14		24			
Grand Falls, N.B. ....		17		96			
Grand Narrows, N.S. ....		14		25			
Grand Lake, N.B. ....		17		180			
Grands Mechins, P.Q. ....		19					
Grand River, Ont., bridge.....		25		148			
" dredging .....		22		147			
" N.S. ....		14		26			
" P.E.I. ....				72			
Grande Rivière, P.Q. ....		19		112			
Grande Vallée, P.Q. ....		19					
Granville Centre, N.S. ....		14		26			
Gratuities paid .....		27					
Graving dock officials.....						6	33
Great Tancook Island, N.S. ....		14					
Green Cove, N.S. ....		14		26			
Grenville, P.Q. ....				212			
Grenfell, N.W.T. ....		32					
Green River, P.Q. ....				112			
Grindstone, P.Q. ....		20		113			
Grondines, P.Q. ....		19		113			
Grosse Isle, P.Q., quarantine.....		8	8		30		
Guelph, Ont., public building.....		10, 30					
Gull Harbour, Man. ....		23		166			
Guysboro', N.S., public building .....		7, 28					
<b>H</b>							
Haileybury, Ont. ....				148			
Halliday's Wharf, P.E.I. ....		16		179			
Halifax, N.S., public building.....		7, 28	3				
" graving dock .....		14					
Hamilton, Ont., public building.....		10, 30					
" harbour .....		22		216			
Hampton, N.S. ....		14		27			
Harbours and Rivers, generally .....	7	24					
Harbourville, N.S. ....		14		28			
Hardy Bay, B.C. ....		24					
Harrington, J., gratuity.....		26					
Hatfield Point, N.B. ....		18					
Hawke Point, N.S. ....		14		28			
Hawkesbury, Ont. ....		22		216			
" public buildings.....		10					
Hawkestone, Ont. ....				148			
Heating public buildings.....		28					
Herring Cove, N.S. ....		14		29			
Hiawatha, Ont. ....		22		148			
Hilton, Ont. ....		22		149			
Hnausa, Man. ....		23		166			
Hochelega, P.Q., public building.....		8, 29					
Holdernville, N.B. ....		18					
Honora, Ont. ....		22		149			
Hopewell Cape, N.B. ....		17		87			



Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>H</b>							
Hopewell Hill, N.B.		17		87			
Hortons Landing, N.S.		14		29			
House Harbour, P.Q.		20		114			
Hudson, P.Q.		19					
Hull, P.Q., public building		8, 29					
" wharf		19		114			
Humphreys Point, N.B.	18						
Hydrographic Survey				251			
<b>I</b>							
Iberville, P.Q.		19		114			
Icelandic River, Man.		23		167			
Indian Head, N.W.T., building		12, 32					
Indian Brook, N.S.		14		29			
Ingersoll, Ont., public building		10, 30					
Ingonish, N.S. (North).		14		45	8		
Iona, N.S.		14		30			
Iroquois, N.B.		17					
Island Point, N.S.		14		30			
Isle aux Coudres, P.Q., telegraph		25			14		
" harbour		19		115			
Isle Perrot, P.Q.		19		115			
Isle Verte, P.Q.		19		115			
<b>J</b>							
Janvrins Island, N.S.		14		31			
Jenkins Cove, N.B.		18					
Joliette, P.Q., public building		8, 29					
Judique, N.S.		14		31			
<b>K</b>							
Kaministiquia River, Ont.				216			
Kamloops, B.C., public building		12, 33					
Kamloops-Nicola, telegraph		26			17, 37		
Kamouraska, P.Q.		19		115			
Kaslo, B.C., drill hall		12, 33					
Kempt Head, N.S. telegraph		25					
Kennedy Lake, B.C.		24		168			
Kentville, N.S., public building		7, 28					
Kincardine, Ont.		22		149			
Kingsport, N.S.		14		32			
Kingston, Ont., harbour		22		216			
" graving dock		22		238		6, 15	
" public buildings		10, 30					
Kingsville, Ont.		22		150			
Knights Point, P.E.I.		16		75			
Knowlton's Landing, P.Q.		19		116			
<b>L</b>							
Lachine, P.Q., public building		8, 29					
Lacombe, N.W.T., immigration building		32					
Lake Beaulieu, P.Q.		20		116			
Lake Dauphin, Man.		23		167			
Lake Francis "		23		232			
Lake Manitoba "		23		166			
Lake Megantic, P.Q.		19		116			
Lake Nominigoue, P.Q.		19		120			
Lakeport, Ont.				150			
Lake Simcoe and Couchiching, Ont.		22					
Lake St. John, P.Q.		19					
Lake St. Peter, P.Q.	12			259			
Lamberts Pier, P.E.I.		16					
Lamerton, N.W.T., immigration building		32					
Lancaster, Ont.		22		150			

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>L</b>							
Lands leased, &c. ....		19					15
Lanoraie, P.Q. ....		19					
Laprairie, P.Q. ....		8, 29		116			
" public building. ....		14		32			
L'Ardoise, N.S. ....		14		33			
Larry's River, N.S. ....		19		212			
L'Assomption, P.Q. ....		8, 29					
" public building. ....		25		249			
Laurier bridge, Ottawa ..		7	3				
Lawlor's Island, N.S., quarantine station ..		22		150			
Leamington, Ont. ....							12
Leased properties. ....		32					
Leduc, N.W.T., building. ....				116			
Les Cuiasses d'Alma, P.Q. ....		19					
Les Eboulements, P.Q. ....		19		117			
Le Tableau, P.Q. ....		12, 32					
Lethbridge, N.W.T., public building ..		25					
" bridge. ....							43
Letters, departmental, sent and received. ....		19		238		6, 14	
Levis, P.Q., graving dock ..		8, 29	8				
" public building. ....		16		72			
Lewis Point, P.E.I. ....		24					
Lewis-Yukon rivers. ....		28					
Lighting, public buildings. ....		10, 30					
Lindsay, Ont., public buildings. ....		14		33			
Lingan, N.S. ....		18		8			
Lismore, N.S. ....		19					
L'Ile d'Alma, P.Q. ....		19		117			
L'Islet, P.Q. ....		22		151			
Little Bear Creek, Ont. ....		20					
Little Fox River, P.Q. ....		17					
Little Forks, N.B. ....		14		34			
Little Harbour, N.S. ....		17		88			
Little Salmon River, N.B. ....		17					
Little Tobique, N.B. ....		20					
Little Valley, P.Q. ....		15		178			
Liverpool, N.S., harbour. ....		7, 28					
" public building. ....		15		34			
Livingston Cove, N.S. ....		12					
Lloydminster, N.W.T. ....		15		34			
Lockport, N.S. ....		17		79			
Loggieville, N.B. ....		8					
Longueuil, P.Q., public building. ....		10, 30					
London, Ont., public buildings. ....		17		88			
Lord's Cove, N.B. ....		22		151			
L'Orignal, Ont. ....		19		118			
Lotbinière, P.Q. ....		16					
Lower Montague, P.E.I. ....		19					
Lower St. Lawrence piers. ....		15		35			
Lower Washabuck, N.S. ....		15		35			
Lower West Pubnico, N.S. ....		7, 28					
Lunenburg, N.S., public building. ....							
<b>M</b>							
McCracken's Landing, Ont. ....		22		151			
McGowans, N.B. ....		18					
McGregor's Creek, Ont. ....		22		152			
McKay's Point, N.S. ....		15		38			
McNair's Cove, N.S. ....		15		39			
McNutt's Island, N.S. ....		15		39			
Mabou, N.S. ....		15		178	27		
Macleod, N.W.T., public building. ....		12, 32					
Madawaska River, slide. ....		24		242			
" N.B. ....		17					
Magdalen Islands, P.Q. ....		20			9, 25		
Magog, P.Q. ....		20		118			
Maguasha, P.Q. ....		20		118			

## SESSIONAL PAPER No. 19

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>M</b>							
Main-a-Dieu, N.S.		15		35			
Main River, N.B.		17					
Malagawatch, N.S.		15		36			
Malignant Cove, N.S.		15		36			
Manitoba, dredging		23		232			
" harbours and rivers	9	23		166			
" public buildings		11, 31					
Maple Creek, N.W.T., court house		32					
Marconi—wireless telegraphy					20		
Margaree Harbour, N.S.		15		37			
Margaretville, N.S.		15		38			
Maria, P.Q.		20		118			
Maria Street bridge, Ottawa		25		249			
Maritime Provinces, dredging		14					
" public buildings		7, 28					
" telegraphs		25			6		
Marysville, N.B., public building		8, 28	5				
Matane, P.Q.		20		118			
Meaford, Ont.		22		152			
Medicine Hat, N.W.T., public building	12, 32						
Melburne, N.S.		15		40			
Meteghan Cove, N.S.		15		40			
Meteghan River, N.S.		15		41			
Middleton, N.S., armoury		7					
Middle River, N.S.		15		43			
Midland, Ont.		22		152			
Mimisingash, P.E.I.		16		73			
Minuidosa, Man., lands office		32					
Minudie, N.S.		15					
Miramichi, N.B.		17					
Miscou, N.B.		17		88			
Mispec, N.B.		17		89			
Mistook, P.Q.		20		119			
Moisie Post Road, P.Q.		25					
Moncton, N.B., public building		8, 28					
Monetville, Ont.		22		153			
Montague, P.E.I., public building	7, 28						
Montebello, P.Q.		20		212			
Mont Louis, P.Q.		20		119			
Montmagny, P.Q., public building		8, 29					
" wharf		20		119			
Montreal, P.Q., public buildings		8, 29	9				
" harbour	9	20		120			
Morrel, P.E.I.		16					
Moose Jaw, N.W.T., public buildings		12, 32					
Moosomin, N.W.T.		12, 32					
Morpeth, Ont.		22		153			
Mount Julien, Ont.		23		153			
Musquodoboit, N.S.		15		43			
<b>N</b>							
Nadeau, A., gratuity		26					
Names of Chief Officers							27
Nanaimo, B.C., public building		12, 33	22				
Nanaimo—Comox, telegraph		26			17, 38		
Napanee, Ont., public building	10, 30						
Napan, N.S., experimental farm		7					
National Art Gallery, Ottawa		10, 30					23
Necum Tench, N.S.		15		43			
Negro Point, N.B.		18		90			
Neguac, N.B.		17		180			
Nell's Harbour, N.S.		15					
Nelson, B.C., public building	12, 33						
New Brunswick, dredging		17					
" harbour		17		77			
" public buildings		7, 28	4				
" telegraphs		25					

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>N</b>							
New Carlisle, P.Q.		20		120			
Newcastle, N.B.		17					
" public building.		8, 28					
Newcastle District, slides.		24		246		6, 12	
Newcastle, Ont.		23		153, 217			
Newfoundland, telegraph.		25			6, 23		
New Glasgow, N.S., public building		7, 28					
New Harbour, N.S.		15		44			
Newelton, N.S.		15		44			
New Liskeard, Ont.		23		217			
New London, P.E.I.		12		73			
Newmarket, Ont., post office.		30					
Newport, P.Q.		20					
New Richmond, P.Q.		20					
New Westminster, B.C., public bldgs.		12, 33	22				
Niagara Falls, Ont., public building		10, 30					
Nicolet, P.Q.		20		212			
North Bay, Ont.		23					
North Cardigan, P.E.I.		16		74			
North Gut, St. Ann's, N.S.		15					
North Head, N.B.		17					
" post office		8					
North River, N.S.		15		45			
North Shore, St. Lawrence, telegraphs		25			10, 32		
North Sydney, N.S., public building		7, 28					
North Thomson, river, B.C.		24					
North-west Territories, bridges		25		250			
" public buildings.		12, 32	21				
" telegraphs.		26			15, 36		
Notre-Dame du Lac, P.Q.		21		121			
Notre-Dame du Portage, P.Q.		20					
Nova Scotia, dredging.		14					
" harbour.		14		6			
" public buildings.		7, 28	3				
" telegraphs		25			26		
<b>O</b>							
Oak Point, N.S.		14		32			
Oakville, Ont.		23		154			
Officers of the Department.							27
Officers employed on graving dock.							33
" " slides and booms.							29
Ogden's Pond, N.S.		15		46			
Old Mans River bridge		25					
Ontario, bridges		25		250			
" dredging		22					
" harbours.		22		141			
" public buildings.		9, 29	12				
" telegraphs.		25			14, 35		
Orangeville, Ont., public building.		30					
Orillia, Ont., public building.		10, 30					
" harbour.		23		154			
Oromocto, N.B.		18		180			
Oshawa, Ont., public building		10					
" harbour		23					
Otonabee River, Ont.		23		246			
Ottawa, Art gallery.		10, 30					23
" buildings and grounds.		10, 30	13				
" government house.		10, 30	14				
" experimental farm		10, 30	13				
" Major's Hill Park.		10, 30	16				
" observatory.		10, 30	17				
" post office.		10, 30	16				
" printing bureau		10, 30	17				
" river.		23		217			
" slides and booms.		24		240		3, 11	
" roads and bridges.		25		249			

## SESSIONAL PAPER No. 19

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>O</b>							
Ottawa streets, repairs.....		25	18				
Owen Sound, Ont., public building.....		19					
" harbour.....		14		154			
<b>P</b>							
Pacific cable tariff.....					44		
Paris, Ont., public building.....		10, 31					
Parkers Cove, N.S.....		15		46			
Parkers, N.B.....		18					
Parliament buildings, Ottawa.....		10, 30	13				
Parrsboro, N.S.....		15		47			
Parry Sound, Ont.....		23					
Partridge Island, N.B., quarantine.....		8		5			
" wharf.....		17		92			
" N.S.....		15					
Paspebiac, P.Q.....		20		121			
Pelee Island, Ont., wharf.....		23		155			
" telegraph.....		25			14, 35		
Pembroke, Ont.....		23					
" public building.....		10, 31					
Pembroke, N.S.....		15		47			
Penetanguishene, Ont.....		23		155			
Perce, P.Q.....		20		121			
Peribonca, P.Q., public building.....		9, 29					
Perth, Ont., revenue building.....		11					
Peterborough, Ont., public building.....		11, 31					
Petit Bonaventure, P.I.....				122			
Petewawa River, slides.....		24		242			
Petit de Grat, N.S.....		15		47			
Petite Anse Chlorydormes, P.Q.....		20					
Petites Bergeronnes, P.Q.....		20		167, 122			
Petite Rivière, P.Q.....		20		122			
Petit Cap, P.Q.....		20					
Petit Rocher, N.B.....		17		93			
Petites Tourelles, P.Q.....		20		122			
Petrolea, Ont., public building.....		11, 31					
Philippsburg, P.Q.....		20					
Photographer, departmental.....		27					
Pickering, Ont.....		23		156			
Picketts Pier, N.S.....		15		48			
Pictou, Ont., public building.....		11, 31					
Pictou Island, N.S.....		15					
Pictou, N.S.....		15		48, 177			
" public buildings.....		7, 28					
Pierreville, P.Q.....		20		122, 213			
Pinkneys Point, N.S.....		15		49			
Pleasant Bay, N.S.....		15					
Pointe à Elie, P.Q.....		20		123			
Pointe aux Esquimaux, P.Q.....		20		123			
Pointe aux Trembles, P.Q.....		20		123			
Pointe au Baril, Ont.....				156			
Pointe du Chêne, N.B.....		17		93, 180			
Pointe Claire, P.Q.....		20					
Point Edward, Ont.....		23		156			
Point Edward, N.S., quarantine.....		7					
Point Fortune, P.Q.....		20		123			
Point Prim, N.S.....		16					
Pointe St. Pierre, P.Q.....		20					
Poirierville, N.S.....		15					
Portage du Fort, bridge.....		25		250			
Portage la Prairie, Man., public building.....		11, 32					
Porter's Lake, N.S.....		15		50			
Port Arthur, Ont., harbour.....		23		157, 217			
" public building.....		11, 31					
Port au Pique, N.S.....		15		49			
Port Bevis, N.S.....		15		10			
Port Burwell, Ont.....		23		157, 218			

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>P</b>							
Port Colborne, Ont. ....	9	23		158			
" public building .....		11, 31					
Port Daniel, P.Q. ....		20		124			
Port Darlington, Ont. ....		22		143			
Port Elgin, Ont. ....		23		160			
Port George, N.S. ....		15		50			
Port Greville, N.S. ....		15		51			
Port Hawkesbury, N.S. ....		15		52			
Port Hood, N.S. ....		15		52, 178			
Port Hope, Ont. ....		23		160, 218			
" public building .....		11, 31					
Port Howe, N.S. ....		15		53			
Port Latour, N.S. ....		15		53			
Port Maitland, N.S. ....		15		54			
Port Morien, N.S. ....		14		15			
Portland, N.B., public building. ....		8					
Port Phillip, N.S. ....		15		53			
Port Stanley, Ont. ....		23					
Poulamond, N.S. ....		15		55			
Prescott, Ont., public building .....		11, 31					
" dredging .....		23					
Prince Albert, N.W.T., public building .....		12, 32					
Prince Edward Island, dredging .....		16					
" harbours .....		16					
" public buildings .....		7	28				
" telegraph .....		25					
Printing Bureau, Ottawa .....		10, 30					
Printing and stationery .....		13					
Properties purchased and sold .....							12
Prospect, N.S. ....		15		56			
Public buildings, British Columbia .....		12, 33	22				
" Manitoba .....		11, 31	20				
" New Brunswick .....		7, 28	4				
" North-West Territories .....		12, 22	21				
" Nova Scotia .....		7, 28	3				
" Ontario .....		9, 30	12				
" Prince Edward Island .....		7, 28	7				
" Quebec .....		8, 29	8				
" Yukon Territory .....		13					
" generally .....	14	13, 33	25				
Public Works Agency, B.C. ....		27					
<b>Q</b>							
Quaco, N.B. ....		17		94			
Qu'Appelle, N.W.T., court house .....		32					
Quatsino, B.C. ....		24		172			
Quebec—dredging .....		18					
" bridges .....		25		250			
" harbours, &c. ....		18		104			
" public buildings .....	8, 29	8					
" telegraphs .....	25			21			
Quebec city—public buildings .....	8, 29	9					
" wharf .....	20			124			
<b>R</b>							
Ragged Head, N.S. ....		15		56			
Rat Portage, Ont., public building .....		11, 31					
Red Deer, N.W.T., pub. buildings .....		12, 32	21				
Red Head, N.S. ....		15		57			
Red River, Man. ....		23					
Red Store Wharf, N.B. ....		17					
Regina, N.W.T., public buildings .....		12, 32	21				
Rents, received .....						7	
" paid .....		28					
Repentigny, P.Q. ....		20					
Revelstoke, B.C., drill hall .....		12					

## SESSIONAL PAPER No. 19

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>R</b>							
Revenue.....	6						1
Richibucto, N.B., public building.....		8, 28	5				7
"    wharf.....		17		94			
"    river.....		17		181			
Richmond, P.Q.....		21		125			
Richmond, P.Q., public building.....		9, 29					
Richmond Bay, P.E.I.....		16					
Rideau, Hall, Ottawa.....		10, 30					
Rigaud, P.Q.....		20		213			
Rimouski, P.Q., public building.....		9, 29					
"    wharf.....		23		126			
River Kaministiquia, Ont.....		23					
"    Thames, Ont.....		23					
"    St. Francis, P.Q.....		21					
"    St. John, N.B.....		17		95			
"    St. Lawrence.....		20, 23		259			
"    St. Louis, P.Q.....		21		214			
"    St. Maurice, dredging.....		21		247		5, 11	
"    St. Maurice, slides, &c.....		24					
Rivière aux Renard, P.Q.....		20					
"    "    Puces, Ont.....		23		160			
"    Batiscan P.Q.....		20		211			
"    Blanche, P.Q.....		20					
"    Chateauguay, P.Q.....		21		211			
"    du Lièvre, P.Q.....		21		126, 238		6	
"    du Loup, P.Q.....		21		126			
"    Jésus, P.Q.....		21		213			
"    Ottawa.....		20, 23					
"    Ouelle, P.Q.....		21		127			
"    Richelieu.....		21		127			
"    Verte.....		21					
"    Saguenay, P.Q.....		21					
"    St. Anne, P.Q.....		20					
Rocher Noir, P.Q.....		20					
Roads and bridges.....		25		249			
Roberval, P.Q., immigration building.....		9, 29					
"    wharf.....		19, 21		128, 213			
Robbins Landing, Ont.....		23		161			
Rosedale, Ont., wharf.....		23		161			
Roseland, B.C., public buildings.....		12, 23	22				
Rosthern, N.W.T., public buildings.....		12, 32					
Rondeau, Ont.....		23		161, 218			
Rustico, P.E.I.....		16					
Russell, James, gratuity.....		26					
Ryan, Thomas.....		26					
<b>S</b>							
St. Alexis, P.Q.....		21		129			
St. Alphonse, de Bagotville, P.Q.....		21		130			
St. André de Kamouraska, P.Q.....		21		131			
St. Andrews, P.Q.....		21		213			
St. Andrews Rapids, Man.....	9	23		167			
Ste. Anne de la Pêrade, P.Q.....		21		136			
Ste. Anne de la Pocatière, P.Q.....		21		136			
Ste. Anne des Monts, P.Q.....		21		137			
Ste. Anne de Sorel, P.Q.....		21		136			
Ste. Anne du Saguenay, P.Q.....		21		137			
St. Antoine, P.Q.....				214			
St. Blaise, P.Q., dredging.....				214			
St. Catharines, Ont., public building.....		11, 31	19				
St. Denis, P.Q.....		21					
St. Eustache, P.Q., post office.....		29					
Ste. Emélie, P.Q.....				138			
Ste. Famille, P.Q.....		21		138			
St. Félicien, P.Q.....		21		131			
St. Fidèle, P.Q.....		21		131			
St. Francis River, N.B.....		17					



Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>S</b>							
St. Francis River, P.Q.		21		125			
St. François, P.Q.		21		132			
St. Fulgence, P.Q.		21		132			
St. Gédéon, P.Q.		21		132			
Ste. Genevieve, P.Q.		21		138			
St. Godfroid, P.Q.		21					
St. Henri, P.Q., public building.		9, 29					
St. Hyacinthe, P.Q., public building.		9, 29	10				
St. Irénée, P.Q.		21		132			
St. Jean, Ile d'Orléans.		21		133			
St. Jean de Chailions, P.Q.		21		214			
St. Jean Chysostôme, P.Q.		19		132			
St. Jean Port-Joli, P.Q.		21		133			
St. Jérôme, P.Q., public building.		9, 29					
" wharf.		21		133			
St. John River, N.B.		17		95			
St. John harbour, N.B.,		18		180, 181			
" N.B., public buildings.		8, 28	6				
St. Johns, P.Q.		9, 29					
" wharf.		21		214			
St. Joseph, Ont.		23		162			
St. Laurent, Ile d'Orléans.		21					
St. Louis du Mile End, P.Q.		9					
St. Marc, P.Q.		21		134			
St. Mathias, P.Q.		21		134			
St. Maurice River, dredging.		21		214			
" slides, &c.		24		247		5, 11	
St. Méthode, P.P.		19		140			
St. Michel de Bellechasse, P.Q.		21		134			
St. Nicholas, P.Q.		21		135			
St. Nicholas River, N.B.		18					
St. Peters, N.S., telegraph.		25			6		
St. Peters Bay, P.E.I.		16		74			
St. Roch, P.Q., public building.		29					
St. Roch des Aulnaies, P.Q.		21					
St. Siméon, P.Q.		21		135			
St. Stephen, N.B., public building.		8, 28					
St. Thomas, Ont., public building.		11, 31					
St. Valentin, P.Q.		21		135			
St. Zotique, P.Q.		21		136			
Sabrevois, P.Q.		21		128			
Sacré-Cœur, P.Q.		21		113			
Saguenay River, telegraph.		25					
Salmon River, N.B.		17					
Salmon River, B.C.		24					
Saltcoats, N.W.T., immigration shed.		12					
Sandy Cove, N.S.		15		57			
Sarnia, Ont., public building.		11, 31					
" dredging.		23		162			
Saskatoon, N.W.T., immigration building.		12, 23					
Sault Ste. Marie, Ont., wharf.	8	23		162			
" public building.		11					
Scotts Bay, N.S.		15		57			
Secretary's staff, salaries.		26					
Selkirk, Man., immigration building.		11, 32					
Selkirk, Man., wharf.		23		167			
Seven Islands, P.Q.		21		110			
Sewell, N.B.		18					
Shag Harbour, N.S.		15		58			
Sherbrooke, P.Q., public buildings.		9, 29					
Shegawake, P.Q.		21		138			
Ship Channel, St. Lawrence.	13	20		259			
Shippegan, N.B.		18		100			
Ship yard, Sorel, P.Q.	12			271			
Short Beach, N.S.		15					
Sidney, B.C.		24		173			
Sight Point, N.S.		15					
Skeena River, B.C.		24		173			



## SESSIONAL PAPER No. 19

Names of Places, &c.	Part 1. Page.	Part 2. Page.	Part 3. Page.	Part 4. Page.	Part 5. Page.	Part 6. Page.	Part 7. Page.
<b>S</b>							
Slides and booms.....		24		240			
"    dues.....						8	
"    officials.....							29
Smith's Falls, Ont., public building.....		11, 31					
Sorel, P.Q., public buildings.....		9, 29					
"    harbour.....		21		139			
"    ship yard.....	12			271			
Souris, P.E.I.....		16		75			
South Gut, N.S.....		15		58			
South Ingonish, N.S.....		15		59			
Spallumachine, B.C.....		24		174			
Springhill, N.S., public building.....		7, 28					
Springhill, N.B.....		18		181			
Spry Bay, N.S.....		15		59			
Stonehaven, N.B.....		17		84			
Stratford, Ont., public building.....		11, 31					
Stratheona, N.W.T., immigration building.....		12, 33					
Strathroy, Ont., public building.....		11, 31					
Sturgeon Falls, Ont.....		23		162			
Sturgeon Pier, P.E.I.....		16		75			
Summerside, P.E.I., harbour.....		16					
"    public building.....		7, 28					
Superintendent of telegraphs.....	15				1		
Surveys and inspections.....		24		4			
Sussex, N.B., public buildings.....		8, 28	5				
Swims Point, N.S.....		16		60			
Sydenham River, Ont.....		23		163			
Sydney, N.S., public building.....		7, 28	3				
"    dredging.....		16					
"    quarantine wharf.....		16		60			
Sydney Mines, N.S., public building.....		7					
<b>T</b>							
Tableau, P.Q.....		19					
Tadousac, P.Q.....		21		139			
Tancook, N.S.....				60			
Tariff, telegraph lines.....					43		
Technical, books of reference.....		26					
Telephones.....					21		
Telegraph lines, generally.....	15	16			4		
"    report.....					1		
"    revenue.....					20		
"    service, staff, &c.....		26			23, 29		
Temiscouata Lake, P.Q.....		21		121			
Temporary employees.....		26					
Tenecape, N.S.....		16		61			
Terrebonne, P.Q., public building.....		9					
Tulon, N.W.T., immigration building.....		33					
Thames River, Ont.....		23					
Thessalon, Ont.....		23		163			
Thetford Mines, P.Q., public building.....		9	11				
Thomson, N.B.....		18					
Thompson River, B.C.....		24		174			
Thornbury, Ont.....		23		163			
Three Rivers, P.Q., harbour.....		21					
"    public building.....		9, 29					
Ticouabé, P.Q.....		19		140			
Tidnish, N.S.....		16					
Tignish, P.E.I.....		16		76			
Tiverton, N.S.....		16		61			
Tobique River, N.B.....		17		98			
"    Rocks, N.B.....		17		98			
Tolsmaville, Ont.....				164			
Topley's, N.B.....		18					
Toronto Junction, Ont., public buildings.....		11	20				
Toronto, Ont., harbour.....		23		164			
"    public buildings.....		11, 31	19				

Names of Places, &c.	Part 1 Page.	Part 2 Page.	Part 3 Page.	Part 4 Page.	Part 5 Page.	Part 6 Page.	Part 7 Page.
<b>T</b>							
Total expenditure of department.....		27					
Tracadie, N.B., lazaretto.....		8, 28					
Tracadie, N.S.....		16		61			
Tracadie, N.B., wharf.....		18		101			
Transportation Commission.....	10	26					
Trent and Newcastle, slides.....		24		246		6, 12	
Trenton, Ont., harbour.....		23		218			
" public building.....		11, 31					
Trois Lacs, P.Q.....		22		140			
" Pistoles, P.Q.....		22		141			
Truro, N.S., public buildings.....		7, 28					
Tynemouth Creek, N.B.....		18		102			
Tyrian, ss. cable ship.....	16	25			20		
<b>U</b>							
Uncollected slide and boom dues.....						8	
Upper Gagetown, N.B.....		18					
" Port Latour, N.S.....		16		62			
" Salmon River, N.B.....		18		103			
<b>V</b>							
Valleyfield, P.Q., dredging.....		22		215			
" public building.....		12, 33	23				
Vancouver, B.C.....		8, 27	26				
Vancouver Salt Springs, telegraph.....		26			40		
Verchères, P.Q.....		22		141			
Vernon River, P.E.I.....		16		76, 179			
Victoria, B.C., harbour.....		24		174			
" public buildings.....		13, 33	23				
Victoria, Cape Beale, telegraph.....		26			17, 40		
" Andrew, N.W.T., telegraph.....		26					
Victoria, P.E.I.....		16		76			
Victoria Beach, N.S.....		16					
Victoria, Ont.....		23		165			
Victoria National Museum.....	10						
Victoriaville, P.Q., public building.....		9, 29					
Ville Marie, P.Q.....		22		215			
<b>W</b>							
Walkerton, Ont., public building.....		9, 31					
Washabuck, N.S.....		16		63			
Washago, Ont.....		165					
Water, public buildings.....		28					
Wedge Point, N.S.....		16		63			
Wendover, Ont.....		23		165			
West Baccaro, N.S.....		16		63			
West Bay, N.S.....		16		64			
" Chezzetcook, N.S.....		16					
West Farnham, P.Q., public building.....		9, 29					
Western Head, N.S.....		16		64			
West Point, P.E.I.....		16		77			
" Pubnico, N.S.....				65			
West Wood Harbour, N.S.....				65			
Wetaskiwin, N.W.T., public building.....		33					
Whitehaven, N.S.....		16		66			
Whites Cove, N.S.....		16		66			
White Mud River, Man.....		23		232			
Warton, Ont.....		23		166			
Wickham, N.B.....		18					
Williams Head, B.C., quarantine.....		13, 33	24				
" wharf.....		24		175			
Wilmer Channel, B.C.....				169			
Wilson's Beach, N.B.....		17		103			
Wilson, Jas., gratuity.....		26					
Windsor, N.S., public building.....		7, 28					

## SESSIONAL PAPER No. 19

Names of Places, &c.	Part 1. Page.	Part 2. Page.	Part 3. Page.	Part 4. Page.	Part 5. Page.	Part 6. Page.	Part 7. Page.
<b>W</b>							
Windsor, Ont., public building.. . . . .		11, 31					
" N.S., wharf.. . . . .		12		67			
Wingham, Ont., post office.. . . . .		11	20				
Winnipeg, Man., public buildings.. . . . .		11, 32	20				
Wood Mountain, N.W.T., telegraph.. . . . .		26					
Wolfeville, N.S.. . . . .		16		67			
Wolseley, N.W.T., court house.. . . . .		12, 33					
Wood Island, P.E.I.. . . . .		16					
Woodstock, N.B., public building.. . . . .		8, 28					
Woodstock, Ont. " .. . . .		11, 31					
<b>Y</b>							
Yamaska River, P.Q.... . . . .		22		215			
" lock and dam .. . . .		22		239		6	
Yarmouth, N.S., dredging.. . . . .		16		68, 178			
" public building.. . . . .		7, 28					
York Bridge, Ont. . . . .		25					
Yorkton, N.W.T., public buildings.. . . . .		12, 33					
Yukon River .. . . .		24					
Yukon, public buildings.. . . . .		13					
" telegraphs .. . . .	26				41, 49		



PART I

REPORT

OF THE

DEPUTY MINISTER OF PUBLIC WORKS

FOR THE YEAR ENDED JUNE 30

1904



REPORT  
OF THE  
DEPUTY MINISTER OF PUBLIC WORKS  
FOR THE FISCAL YEAR, 1903-04.

---

DEPARTMENT OF PUBLIC WORKS,

OTTAWA, January 30, 1905.

The Honourable CHARLES S. HYMAN,  
Acting Minister of Public Works of Canada

SIR,—I have the honour to submit to you the report of the Department of Public Works of Canada for the fiscal year ended June 30, 1904.

This report, the general plan of which does not differ materially from that submitted to parliament for the last fiscal year, refers to the works carried on during the 12 months ended June 30, 1904, in the improvement of harbours, rivers, slides and booms, roads and bridges; the construction, maintenance and repairs of the several public buildings, as well as the continuation, completion and maintenance of the telegraph system of the department throughout the Dominion of Canada. It contains also statements of the revenue accrued and collected by this department during the same period, as well as of the expenditure made during the fiscal year.

The information contained in the annexed appendices shows in detail the operations carried on under the guidance of the chief officers of your department. The work performed under their direction, following the increase of the general business of the country and being in direct proportion to the larger amount of money granted for the improvement of the avenues destined to accommodate our ever growing trade and commerce, has required from them, during the year under review, an attention to their work and an exercise of their high qualifications which can at once be discerned by the perusal of their individual reports. It is true that in one of the branches of the service, that of the Chief Engineer, a certain proportion of the work allotted to him has been diverted by legislation to another department, but while the sum of money disbursed for the management of the work in question reached the fairly large average of \$500,000 per year (I am now speaking of the ship channel between Montreal and Quebec) still the increase in the general expenditure for the balance of the harbour and river works have more than trebled the sum that used to be spent, under the control of that officer, in connection with this particular work. The gross total of the work under the charge of the Chief Engineer has not, therefore, for this reason, been in any

4-5 EDWARD VII., A. 1905

way materially reduced but has otherwise so very largely increased that it has required from the officer in charge, Mr. Lafleur, increased exertion and has entailed upon him a much greater amount of responsibility.

Such an extension in the scope of the officers' duties has been manifest in all of the branches of your department. The class of buildings, of which the construction has been started during the past year, is of much greater importance and has entailed much more arduous preparation than for years past, while the ever increasing number of new buildings consequent upon the yearly addition to an already numerous list has required from the Chief Architect a greater than usual amount of labour, not only in the line of new buildings but in superintending the maintenance of those already constructed.

In the telegraph system the same enlargement has taken place. The mileage of our telegraph lines is now over 6,000 miles. In cables alone we have to superintend the maintenance of 402 miles.

I am glad to be able again this year to state that the maintenance of our telegraph lines, especially the systems in the Yukon and on the north shore of the St. Lawrence have been attended with very satisfactory results, the whole reflecting great credit upon the General Superintendent.

#### EXPENDITURE.

The total expenditure during the fiscal year under review, in the various branches of the department, has amounted to the total sum of \$7,392,289.62, that sum comprising an amount of \$900,000 advanced during that year to the Harbour Commissioners of Montreal for the performance of such works of construction as were authorized by legislation and paid for out of the sums allotted for that purpose by the several Acts of parliament having reference to the establishment of said harbour.

The detail of the general expenditure may be described and divided as follows, viz. :—

Harbour and river works. . . . .	\$3,389,936 02
Dredging and plant . . . . .	374,181 94
Slides and booms. . . . .	127,549 37
Bridges and roads . . . . .	103,759 29
Public buildings. . . . .	1,890,281 77
Telegraphs. . . . .	385,693 51
Miscellaneous . . . . .	220,887 72
	<hr/>
	\$6,492,289 62

To the above sum should be added that of \$900,000 advanced to the Montreal Harbour Commissioners, which makes the total amount expended under the supervision of this department, \$7,392,289.62.

During the fiscal year under review the Harbour Commissioners of Montreal completed the erection in their harbour of a large grain elevator of the best and most



## SESSIONAL PAPER No. 19

modern construction, and I am proud to say that the work in all its details was supervised and carried to a successful issue under one of the departmental engineers, Mr. Arthur St. Laurent, to whose professional ability no better certificate can be given than the satisfactory completion and acceptance of such a difficult piece of work.

I may here call attention to the fact that the above report of the expenditure of the department does not actually give an absolutely exact and correct idea of the work performed by its officers. While it is true that the direct expenditure has only amounted to the sum of \$6,492,289.62, it must be borne in mind that the vote placed at the disposal of the department for the same fiscal year has amounted to the sum of \$8,681,227.20; the difference between the sum expended and that voted being explained by the fact that either certain works for which amounts were provided by parliament could not be commenced during the year, or that some of the works commenced were not carried on as quickly as expected. Plans, however, had to be prepared for each of those works; surveys and estimates were made and in a good many cases tenders were called for and contracts awarded. In fact, all the initial work in connection with the unexpected amounts was actually performed and must be taken into consideration when the work of the department during the year is being passed under review.

In the Chief Engineer's branch alone, 238 surveys were made during the year.

A perusal of the short introduction given by the Accountant of the department to his annual statement will show that material increase has taken place in the work of that branch, if only the issue of cheques, in payment for the department's operations, is considered: the number of cheques issued during the past year has averaged about 4,000 per month, a large part of the payments now being made by cheques to the direct order of the parties entitled to receive the department's money. This large amount of work ought to satisfy the public who may read these lines, that if at times some delay occurs in the issue of a payment for their particular account, they are not the only ones whose accounts are being considered and paid, and that in the work devolving on the Accountant's office a certain delay is altogether unavoidable. It is reasonable to expect that the examination, checking, tabulation, &c., of all the accounts, the issue of cheques to cover them and the mailing of same must take in itself a certain time which cannot always be estimated in minutes or fractions of a minute, and that the impatience at what appears to be delay may not always justify a complaint of dilatoriness and negligence on the part of those entrusted with the work.

The requirements of the Auditor General, as regards the physical appearance of the accounts submitted as vouchers, while generally of a very reasonable nature, refer however to such minute details that the local officers in charge of the several works, whose duty it is to certify those vouchers do not always observe all the rules laid down for such certificates. In such cases the accounts have to be returned to the inspecting officers and by the latter to the local inspectors, and when the works are at some distance, and sometimes out of reach of easy communication, the delay, while perhaps unexplainable to the interested party, is, however, one that cannot be avoided.

4-5 EDWARD VII., A. 1905

Considering the large amount of work that has to be performed, I believe I have reason to congratulate the officer in charge of this branch for the satisfactory manner in which his work has been carried on. Of course, in the performance of the same work year after year, means suggest themselves which are brought into action to expedite the work to be performed and in that manner, although we do not expect to fully satisfy the public, a consummation devoutly hoped for but perhaps difficult of attainment, we hope that the percentage of complaints in reference to the delay in the issue of payments is being brought down to a minimum as low as possible.

REVENUE.

The revenue collected by the department this year has amounted to \$273,203.23, an amount some \$2,000 lower than that collected during the past fiscal year (1902-3) There has been a decrease of some \$7,000 in the revenue of slides and booms and of a little over \$5,000 in the case of graving docks and locks. There is, however, an increase in the telegraph revenue for the past year of some \$15,000.

The revenue branch is carefully looked after by the Collector, Mr. E. T. Smith, who spares neither time nor trouble to bring to the department all the income to which it is entitled out of the several revenue producing branches. The collection of the dues on slides and booms especially entails an incessant labour and great carefulness in the examination of the operations of the several lumbermen in the Trent, St. Maurice and Ottawa districts. The labour of this branch of the service will be further increased next year by the necessary establishment in the River Saguenay of booms for the purpose of accommodating the manufacture of logs of all kinds, especially those which are being produced for the large pulp industry which has been developed at Chicoutimi. New booms are to be placed at the latter point during the present fiscal year (1904-5). and it is expected that a fair revenue will be derived from their use. It is also expected that the ever increasing operations on the River St. Maurice will produce a greater buoyancy in the revenue from that quarter, and taking the departmental operations on all the revenue producing rivers, it is confidently expected that the returns which will be given in the coming report of this department will show a reasonable advance upon those of the present year.

In last year's report I referred to the remarkable advance made in this branch during the past twenty years, when in 1889 the collection only amounted to about \$14,000.

I beg to subjoin a detailed statement of the revenue for the year under review, the same being as follows :—

Slides and booms.. . . .	\$ 70,495 62
Graving docks.. . . .	32,444 56
Locks.. . . .	140 64
Rents.. . . .	4,034 50
Telegraphs.. . . .	147,391 94
Casual revenue.. . . .	18,695 97
	<hr/>
	\$273,203 23

## SESSIONAL PAPER No. 19

## HARBOURS AND RIVERS.

The expenditure of the department under this heading including dredging, slides and booms, and roads and bridges, has amounted to nearly \$5,000,000, a sum larger than the total expenditure of the department three or four years ago.

All the important harbour improvements executed in the Dominion are under the control of this branch of our service and the total sum expended, fairly large as it may be, hardly gives a sufficient idea of the amount of labour involved in its expenditure.

The engineering branch of the department has, in the designing of the works under its charge, to contend with mostly all the contingencies which it is possible for a fertile imagination to conceive.

In the lower provinces, the abnormal tides, the ravages of the sea worm, and the heavy storms of the spring and fall of each year, have to be taken into earnest consideration when the works have to be planned and executed. In the St. Lawrence river it is true that the ravages of the sea worm are not to be feared, but the heavy tides and, especially, the movement of the ice in the spring and fall of the year, have to be contended with and mastered by means which can best suggest themselves to the ingenuity and science of the hydraulic engineers.

In the lake region, the ever changing aspect of the harbours which have to be accommodated, the discharge by the rivers, which in almost every case empty into the harbours of detritus of all kinds brought down by the spring floods; the sometimes friable nature of the bottom upon which the substructures have to be founded, and the washing away by the contending currents of the surface upon which are deposited the cribs forming the basis of the piers and docks constructed, or in which piles are driven to serve as a foundation for the balance of the work, also present to the engineering staff problems which require all their knowledge and science to master.

These difficulties, coupled with the ever prevailing scarcity of good and available timber for the construction of those works, have compelled the department to consider the advisability of, even at a greater cost, increasing the permanency of the works now constructed, especially in the most important harbours.

In the lower provinces, to contend against the ravages of the sea worm, the use of creosoted timber has been introduced and with very good results. However, as there are no creosoting works in Canada, the timber, after it has been treated, has to be imported from the United States, and this therefore precludes the utilization of native timber and compels us to send to our neighbours across the line, large sums of money which would remain with us if creosoting works were established in our Dominion.

On several occasions the department has provided in its estimates for an amount of money necessary to establish such creosoting works, but up to the present time none have been erected and the practice of buying in the United States has continued.

Not only would the creation of such works be useful for our department, but they might also be utilized in connection with other departments of the service, namely: Railways and Canals and Marine and Fisheries, which to my knowledge, have to import yearly a certain proportion of timber in the same way as is done by our department.

4-5 EDWARD VII., A. 1905

In the upper St. Lawrence and on the lake region, the construction of concrete works has offered to the department the best degree of permanency which at the present time can be attained. The works now going on in the harbour of Quebec, those under contract at Three Rivers, the important improvements at Maisonneuve (Montreal), and the large works now going on at Port Colborne, are being built of concrete masonry.

With the gradual disappearance of timber of large dimensions and the consequent higher price to be paid for it, the cost of cement works is gradually becoming very near that which has to be paid for works constructed of sound durable timber of large size, and the permanency of such works, when the repair to harbour works is taken into consideration, will reduce the apparently higher initial cost.

It was with some degree of hesitation that the department, a few years ago, entered into that style of construction owing to the apparent increased price, but we have to congratulate ourselves at present for having ventured on that course and there is no doubt that all the future important works of the department will be constructed in this manner.

‘Wooden structures must of necessity become obsolete; the cost of timber is each year greater, and renewals and repairs are too frequent. Concrete for all structures to be built, and for repairs, would be cheaper in every way, as well as stronger and more lasting, avoiding constant and expensive repairs. Now is the time to start and gain experience in the mode of construction. We have at nearly every harbour the stone, gravel and sand for the taking, and only the cost of cement and labour, with plant, is required to do the work.

‘Recently in the Ontario district the department has built a wharf at Orillia with foundation of wooden cribs and superstructure of concrete, at a cost of no more than if built entirely of timber, decked over and filled with stone.

‘At Sault St. Marie in the extension of the government wharf, the contract called for wooden superstructure, but the contractor offered to build it of concrete for the same amount of cost and his offer was accepted. There is no comparison between the two methods of construction.’\*

Another improvement in the mode of construction of those works is being tried at present in the utilization of a system of beams of reinforced concrete manufactured to resemble timber structures and put together in about the same manner, this plan having been invented and patented by the late J. W. Fraser, a talented young engineer of the department, who, unfortunately, lost his life in a drowning accident which occurred at Rivière du Loup, below Quebec, during the past summer. Mr. Fraser had been connected with the department for a good many years, in fact, had entered it quite young and had grown with it. He was fond of research and study, and utilized his spare moments to inquire into the adaptability of cement and concrete in the construction of works under the charge of the department. Out of his study of that question he evolved the principle of the construction of concrete cribs, which was tried for the first time on the works at Depot Harbour and which, has proved an absolute success.

---

\* Extract from a report by H. A. Gray.

## SESSIONAL PAPER No. 19

It is to be deplored that he did not live long enough to see the success of his discovery and to have the opportunity of making such improvements as the use of his invention would surely have suggested to his knowledge and activity.

The principal works in connection with harbours, which have been under the control of the department, during the year under review, have been: in the province of Nova Scotia, those of Cow Bay and Victoria Beach; in the province of Prince Edward Island, those at Summerside; in New Brunswick, Cape Tormentine, Caraquet and Richibucto works; in the province of Quebec, those at Father Point, Quebec, Montreal, Sorel and Three Rivers; in the province of Ontario, those at Collingwood, Depot Harbour, Midland, Burlington channel, Owen Sound, Port Burwell, Port Colborne, Toronto, Kaministiquia River, Fort William and Port Arthur; in British Columbia, those on the Fraser River and Victoria Harbour.

Several new harbour works were constructed in the various provinces, the detail of which will be found in the chief engineer's report.

The works at Montreal (Maisonneuve) are nearing completion and it is expected that they will be finished by the end of the present season. A full description of the same was given in former reports and the work done during the past fiscal year has been a continuation of what was described. The works at Quebec were commenced under a contract passed on May 8, 1903; they consist of timber cribwork as a foundation for a concrete superstructure which will stand six feet above high water spring tides. When the work is fully completed it will be 984 feet long and will afford much needed accommodation for ocean shipping. The works at Three Rivers are also of a permanent kind, consisting of a concrete superstructure built on a timber and stone foundation. This work has not been going on as rapidly as expected, but it is to be hoped that good progress will be made during the coming year. The harbour of Three Rivers is increasing its trade in a very rapid manner and from information obtained, the harbour can accommodate, if the necessary wharfing were supplied, many thousand tons of traffic in addition to that which is now served.

In the province of Ontario the works at Port Colborne are being pushed with energy with a view to protecting the harbour area which is being formed at the entrance of the Welland canal. The structures which are being constructed there have been built with a view to permanency, concrete being largely utilized in their erection.

A perusal of the report of the chief engineer will show the progress of the works at the various other important points on the lakes.

At St. Andrews rapids, in the province of Manitoba, new conditions have occurred which have rendered necessary the suspension of the contract which had been entered into for the construction of a lock and dam, among them a proposal by the Canadian Pacific Railway to utilize the works to be constructed there for the purpose of combining therewith a railway bridge. New plans will be prepared with a view of amending the work in order to make it agree with the new conditions arising at that place.

The works in the province of British Columbia, under the control of Engineer Keefer, have been continued with activity during the year. At various points on the

4-5 EDWARD VII., A. 1905

Columbia river, as well as on the Fraser river and in the harbours of Victoria and Vancouver, works of improvement which were commenced some two years ago will be carried on in the same satisfactory manner during the next fiscal year.

In brief, great activity has been shown by the department in providing throughout the country, from the Atlantic to the Pacific, those improvements to navigation which the increased commerce, the development of trade in the several parts of the country and the opening up of the west by the continually increasing stream of immigrants, have rendered absolutely necessary.

In this connection I may note here the important work performed by the Royal Commission on Transportation, which has already covered the ground in the eastern provinces and Ontario, and which will proceed to investigate the question of transportation in connection with Manitoba, the North-west Territories and British Columbia. I am sorry to record here the death of the chairman of that commission, Mr. John Bertram, which occurred on November 28 last. In Mr. John Bertram, the commission has lost a very valuable member who, as chairman, had been conducting its work with a great degree of usefulness which promised very valuable information being derived from its labours. His position as chairman has been filled by the appointment of one of his brother commissioners, Mr. Robert Reford, well known in commercial and shipping circles of Montreal, and as member of the commission he has been replaced by Mr. J. H. Ashdown, of Winnipeg.

Although having taken place after the close of the fiscal year under review, I may also note the formation of the Canadian section of the International Commission on Deep Water-ways, which is to act conjointly with the United States nominees to study and reported on questions of navigation in adjoining waters of the Dominion of Canada and the United States of America. The members of the commission chosen are Mr. J. H. Mabee, a legal gentleman from Stratford, Ontario; Mr. Louis Coste, formerly Chief Engineer of this department, and Mr. W. F. King, Astronomer of the Department of the Interior. The members of this commission representing Canada will be called upon to perform valuable work and the nominees selected to represent the Canadian Government are a guarantee that the interests of Canada will be well looked after.

I may also refer to the initial steps which have been taken by the department in connection with the surveys now being proceeded with as a preparation for the compiling of plans and estimates for the construction of the Georgian Bay Canal. This work which is under the control of the Chief Engineer and more especially under the guidance of Mr. Arthur St. Laurent, as engineer in charge of the whole work, was commenced during the course of last summer and at the present moment ten surveying parties are distributed over the area extending from Georgian Bay to the harbour of Montreal. It is expected that the field work will be completed by the end of the present calendar year.

‘The proposed navigation route extends from the mouth of the French river down to Montreal, a distance of about 425 miles.

‘It follows the French river and Lake Nipissing, passes, at the height of land, through Trout, Turtle and Talon lakes, follows the Mattawan river to its junction

## SESSIONAL PAPER No. 19

with the Ottawa, thence down the Ottawa as far as Montreal, leaving the bed of the river occasionally to evade difficult points.

'Sixty-two miles of this route having been carefully surveyed in 1901, there remained 368 miles to be covered by the new survey.

'It was decided, from the beginning, that the information gathered to study the feasibility of the route, to prepare plans and to make a close estimate of cost of the whole route, should be entirely original and that the old plans from old partial surveys should be used only as preliminary information and for general guidance.

'This will involve actual detailed surveys, on a larger scale perhaps than anticipated, and it will make the survey relatively expensive, but for a project of that magnitude and importance, it will prove much more satisfactory, in the end, to collect actual and complete data from the present field operations.

'The immediate object of the survey is, that when the notes are reduced and plotted, a location may be projected on the plans, for a ship canal of no less than 22 feet in depth, a profile drawn and a correct estimate made of the kind and amount of all material found necessary to be excavated, the kind, character of foundation and dimensions of all walls, locks, dams and other structures, also the estimating of all extra right of way required for the canal proper, where it leaves the bed of the rivers and for spoil banks and overflowed areas.'\*

The despatching of so many engineering parties, at the same time as the surveying work for the Transcontinental Railway was being commenced, has given employment to a large number of Canadian engineers. It has been found, on the formation of parties, that the engineering profession in Canada was fully equal to the demand made upon it for the professional equipment which is required for the explorations and studies necessitated by the extensive surveys for those two great works. All the engineering staff has been supplied by Canadian intelligence and professional training, and there is no doubt that the profession in Canada is fully able to render a good account of itself in the performance of the arduous duties connected with the examinations now under way.

During the past fiscal year and under an appropriation granted by parliament two sessions ago, an exploratory and instrumental survey and examination of the Ottawa river was undertaken commencing at or near the foot of Lake Temiscamingue and thence to the source of the river including its principal tributaries and feeders.

Many valuable data have been obtained by the survey parties in spite of the unfavourable weather during the time they were in the field from July to November. The work of plotting the data obtained and preparing the necessary plans is now being proceeded with and it is hoped that the results will be in the possession of the department within a short time.

The work has been throughout under the direction of Mr. G. P. Brophy, the Superintending Engineer of the Ottawa river works.

---

\* Extract from a report by Mr. A. St. Laurent.



4-5 EDWARD VII., A. 1905

## DREDGING.

As was stated in the introduction to my report of last year, a very important part of the work performed by this branch of the department under the control of the Chief Engineer has been that covered by the dredging operations throughout Canada.

The fleet at the disposal of the department has been somewhat reduced by the transfer to the Department of Marine of the vessels engaged in the improvement of the channel between Montreal and Quebec, the seven dredges engaged on that work being no longer under our control. This work, however, the magnitude of which must not be underestimated, only comprises a small proportion of the dredging operations under our charge, and there is still a large fleet attending to the improvement of the harbours and rivers of Canada.

The fleet engaged in the Maritime Provinces will be augmented during the course of the present year by the placing in commission of the new steel dredge the *W. S. Fielding*. This vessel, I think, is the largest of the kind which will be afloat on American waters and it is hoped that its output will be in due proportion to its size, its mode of construction and the expenditure connected with its building and final equipment. Another hydraulic dredge, of smaller proportions but still very powerful, is being now constructed for the Maritime Provinces in the workshops of the Polsons Iron Works in Toronto. She is being built upon the lines adopted for the *King Edward*, operating in British Columbia waters, but several improvements of great value have been added in her construction, and when completed she will be a powerful addition to our maritime fleet.

A new dredge will also be completed for work in Prince Edward Island waters. This one will be a dipper dredge but of modern design and construction.

Plans are now being prepared with a view of calling for tenders for an elevator dredge for the provinces of Ontario and Quebec, with the immediate object of proceeding with the work of improvement in the upper reaches of the River Saguenay at Chicoutimi, where a pressing demand is made for greater depth of water by the more than extraordinary development of the lumber industry, more especially in connection with the manufacture of pulp at the town of Chicoutimi. A large stone lifter will also be provided for.

The powerful dredge *International*, purchased by the department in 1903, has been at work during the past season in the harbour of Quebec.

The dredging fleet on the lakes, which was a year or so ago increased by the addition of a new dredge, *Sir Richard*, has been maintained to its full capacity during the past year, while improvements have also been made to the plant operating on Lakes Winnipeg and Manitoba.

The fleet in British Columbia, to which a valuable addition has been made by the construction two years ago of the hydraulic dredge *King Edward*, is being overhauled, the old snag boat *Samson* being replaced by a new one of an improved type. It is also the intention to provide another dredge to operate in British Columbia waters in the place of the old *Mud Lark*, which has nearly outlived its usefulness.



## SESSIONAL PAPER No. 19

With the improvements under way and those still contemplated, the department will in a year or so be, I hope, in a position to be abreast of all the dredging work which will be necessary in the Dominion, and the work now being performed is a useful corollary to that which has been undertaken during the past eight years for the general improvement of the dredging plant rendered necessary by the urgent and numerous calls made in all the provinces.

The report of the Chief Engineer contains the usual details of the operations of the dredges throughout Canada, the output of each vessel, the average price per yard for their operation and the names of the various places where each dredge was at work. The statements attached to the Chief Engineer's report have been prepared with the usual care by the officers connected with that branch of the service and give a complete and comprehensive review of the work performed.

The dredging service is being looked after, under the general directions of the Chief Engineer, by the General Superintendent of dredging, Mr. James Howden, ably assisted by Mr. E. B. Godwin. This branch, the control of which comprises now the full service in the whole of the Dominion, will be looked after energetically by the officer in charge, who has had long and varied experience both under this department since 1889, and under the Harbour Commissioners of Montreal for many years before that period, when the fleet operating on the St. Lawrence was about the only one performing such work in Canada and when the dredging operations for the improvement of harbours and rivers were still in their infancy.

## SHIP CHANNEL.

The report of the operations on the deepening of the ship channel between Montreal and Quebec is the last one which will find a place in the report of this department as the review of the operations for the fiscal year 1904-5 will be recorded in the report of the Department of Marine. It is only fitting that when bidding adieu to such an important part of the work supervised by us during the past fifteen years, I should render a deserved testimony to the ability and care with which it was performed while under our control. The plans which are now followed are those which were elaborated by the engineers in charge of that service during the above named period, and the success which has marked their performance is of itself the best evidence of the ability of these who were in charge of the work. The channel from Montreal to the head of Lake St. Peter is now, almost everywhere, of the standard depth of 30 feet and the width has been enlarged from 300 feet, at which it was originally placed, to 450 feet and widened in curves to 700 feet. The review of the operations on the channel this year is made by Mr. F. W. Cowie, who has been transferred to the Department of Marine to continue there the clever and useful work which he has performed for so many years in our own department. It is with some degree of sorrow that we have had to part with the useful officers employed here and at Sorel in connection with the ship channel, and it is only fair that this public testimony should be given of their value by one who has been associated with them and with this department for a period of over thirty years.

4-5 EDWARD VII., A. 1905

Mr. Cowie's report gives a full and comprehensive history of the work performed with the usual tables showing the work of each dredge, the points where each of them was stationed, and the average cost of the work of each vessel.

### PUBLIC BUILDINGS.

As I have stated at the beginning of this report, the amount expended on public buildings during the year under review comes to a total sum of nearly \$2,000,000, the expenditure being spread over nearly 300 buildings and having been made not only for new constructions, but for the maintenance of those already constructed, their repair, heating, lighting, &c.

Preparations for two new and important buildings were made during the year under review and tenders have been called for the same, they being the Victoria National Museum and the mint—both at Ottawa. Plans have also been prepared and tenders received for the construction of a new post office in the city of Winnipeg, and designs are also on the way for improved postal facilities in the cities of Montreal and Toronto, where the pneumatic system is going to be tried with all hopes of a successful result, and where additional postal stations are to be established in order to relieve the pressure upon the main post office buildings in those cities.

A large amount of work has also been performed in the Chief Architect's office in connection of the construction of armouries, drill sheds and the providing of new buildings in several of the towns of the Dominion.

During the year 1903-4, the following buildings were commenced or were in course of construction, viz.:

#### *Nova Scotia—*

- Halifax custom house.
- Sydney public building (addition).

#### *New Brunswick—*

- Richibucto public building (completed).

#### *Quebec—*

- Actonvale public building.
- St. Hyacinthe inland revenue building.
- Thetford Mines public building.
- Valleyfield public building.

#### *Ontario—*

- Alexandria public building.
- Bowmanville public building.
- Brantford drill hall.
- Cobourg armoury.
- Ottawa post office (reconstructed).
- St. Catharines drill hall.
- Toronto Junction post office.
- Wingham public building.

## SESSIONAL PAPER No. 19

*North-west Territories—*

Red Deer court-house.

Regina immigration building.

*British Columbia—*

Nanaimo public building.

Rossland drill shed.

The cost of heating the public buildings in the Dominion has amounted during the year under review to \$88,031.41, and for lighting purposes to \$75,017.52.

The buildings, as the report will show have been kept in good state of repair in so far as the grants given by parliament would allow, the repairs being executed under the direction of the officers of the Chief Architect's staff whose efficiency is highly proved by the large amount of work which has been turned out by that branch of the department.

## TELEGRAPHS.

The total number of miles of telegraphs under the control of the department is 6,614½ miles, comprising 327 offices which have transmitted during the year under review a total of 102,100 messages. The Yukon system has continued in good operation during the course of the past fiscal year and the receipts, although not coming up to the expenditure for maintenance, have compared favourably with those of the preceding year. Improvements will be made during the course of the next year, which, I hope, will render the line easier of operation and will minimize the chances of interruption during the winter season. With the exception of a few days the communication with Dawson has been practically uninterrupted during the fiscal year.

In the lower St. Lawrence section, a commencement has been made of the construction of a line between Bersimis and Godbout, to take the place of the cables which were laid down between those points in 1882 and which have practically outlived their usefulness. The interruptions complained of during the previous years, will be a thing of the past when the new land line is completed.

It is worthy of note, that, although constructed in the wildest part of the eastern country, the line from Tadousac to Belle Isle has hardly been interrupted during the past year, with the exception of an occasional rupture of the cables between the main land and Anticosti island and the spasmodic operation of the cables between Bersimis and Godbout, to which I have just referred. The Marconi stations at Chateau Bay and Belle Isle utilized as an alternate means of communication between the mainland and Belle Isle, have been in satisfactory operation during the year, their work being performed easily and communication having been kept up throughout without interruption.

The Quarantine line between Grosse Isle and the city of Quebec has been kept in good order with the exception of frequent interruptions in the cables connecting the Island of Orleans with Grosse Isle. In this connection, and to obviate the recurrence of the inconvenience attending the lack of communications in the spring between the Quarantine station and Quebec, I would recommend Marconi stations, one at Grosse

4-5 EDWARD VII., A. 1905

Isle and one at some point on the Island of Orleans which can be established at very reasonable cost and may be operated without any difficulty when the cable is out of repair. Even the placing of another cable from Grosse Isle to the south shore would not entirely remedy the interruptions complained of. Cables, especially during the winter seasons when the ice is travelling in large quantities and with great rapidity on the River St. Lawrence, are apt to be easily interfered with and their repair cannot be attended to until after the opening of navigation in the spring. During the early part of the season communication has therefore, per force, to be interrupted, and I fully believe that the establishment of Marconi stations would obviate this trouble which is of yearly recurrence.

The SS. *Tyrian*, which attends to our cable service in the gulf, the Bay of Fundy and in the St. Lawrence, has been doing valuable work during the year under its able commander, Capt. O'Leary, Pilot McConnell and its valuable officers. While she was not engaged in her own cable work, she has been of great and valuable service otherwise in attending to the repair of the cables of the Direct Cable Company, the work performed by her in this connection having called forth the highest praise from the management of that cable company.

#### CEMENTS, &C.

Attached to appendix No. 4 will be found a very interesting memorandum from Mr. George E. Perley, Engineer in charge of the cement testing laboratory.

This section of the Chief Engineer's work is becoming very important by reason of the gradual advance of the department in the construction of permanent concrete works. The work in the cement laboratory is being done in a very satisfactory manner and its execution and supervision through Mr. Perley leaves nothing to be desired.

Contractors and other interested parties will appreciate the tables of tests, published in this volume; these are made, not only at the request of the officers of this, but of other departments, and are eminently satisfactory.

#### CONTRACTS.

Appendix No. 7 contains the usual list of contracts, deeds and leases which have been prepared and registered in the office of the painstaking and efficient Law Clerk, Mr. J. A. Chassé.

#### CONCLUSION.

Before concluding this report I beg to offer the expression of my utmost satisfaction to all employees of the department who have assisted in carrying on so successfully the very important works entrusted to them and to myself during the year under review, and I must say that they all deserve the greatest praise for the manner in which they have acquitted themselves of their duties.

I have the honour to be, sir,

Your obedient servant,

A. GOBEIL,  
*Deputy Minister.*

PART II

REPORT OF THE CHIEF ACCOUNTANT

FOR THE

FISCAL YEAR ENDED JUNE 30

1904.



## SESSIONAL PAPER No. 19

## DEPARTMENT OF PUBLIC WORKS, CANADA,

## ACCOUNTANT'S OFFICE,

OTTAWA, Dec. 10, 1904.

A. GOBELL, Esq.,  
Deputy Minister,  
Department of Public Works,  
Ottawa.

SIR,—In presenting the annual report on the expenditures made by this department, during the fiscal year ended June 30, 1904, it may not be amiss to make a brief reference to the changes which have taken place during this and the several preceding years, in both the nature and dimensions of the work of the Accountant's branch.

Of the works carried out under the supervision of this department, although most of the larger ones are performed under contract, yet these are few in number compared with the multitude of minor works both of construction and repair, which are executed by day labour under the direct oversight of officers of the department, the result being that a considerable proportion of the expenditure of the department, and by far the larger part of the work of this branch, has always been devoted to the direct payment of wages for labour and cost of materials, bought at first hand from the producer, for use in such works. The immemorial mode of settling such claims has been by sending a paymaster with cash, to visit each locality monthly. There are many objections inseparable from this method, which it is not necessary to detail at present. Suffice it to say that the expansion of late years, in the work of the department, has been so great that even after doubling the staff of paymasters it was found impossible to keep abreast of the work of payment.

Happily with the growing business prosperity of the country, there has also been a large increase in banking facilities in all parts, as is shown by the following figures :

Number of banks and branches in Canada, Jan. 1, 1896....	530
“ “ “ “ 1900.....	675
“ “ “ “ 1904.....	1059

In many districts, where a few years ago it was utterly impossible to negotiate cheques, and where in fact the meaning of such instruments was hardly understood by the bulk of the population, they now pass readily from hand to hand as the equivalent of cash, and cheques issued by the Dominion government, being payable at par at all banks, are frequently sought after as a convenient means of making remittances.

It was accordingly decided in September, 1900, to adopt, whenever possible, the plan of issuing a separate cheque in favour of each creditor of the department, whether for labour or supplies and whether for a large or a small amount. Such cheques are transmitted by registered letter to the post office address of the payee, or in the case of a paylist, to the foreman for distribution. In most cases no receipt is required, the department trusting for acquittance to the endorsement upon the cheque when paid and returned through the bank. This office is thus enabled to file away its vouchers immediately upon the issue of the cheques, in place of waiting for the return of receipts, as was necessary under the former system—receipts which not infrequently failed entirely to reach the department.

The following statement, showing the number of cheques issued, together with the total expenditure of the department, for the fiscal year just closed as compared with the year 1899 1900 (the last complete year under the former system), will serve to convey some idea of the increase, during the interval, in the annual volume of work performed by the staff of this office.

4-5 EDWARD VII., A. 1905

## YEAR ENDED JUNE 30, 1900.

	Number of cheques issued.	Amount.
Direct payments by departmental cheque—		\$ cts.
Issued by head office, Ottawa.....	18,035	2,422,755 04
" Agencies of the dept.....	3,762	364,894 76
Total departmental cheques.....	21,797	2,787,649 80
	Number of applications.	
Payments by Receiver General's cheque for contract work, &c., audited before payment, upon applications issued by this office.....	365	775,376 54
Total expenditure for year.....		\$3,563,026 34
YEAR ENDED JUNE 30, 1904.		
	Number of cheques issued.	Amount.
Direct payments by departmental cheque—		
Issued by head office, Ottawa.....	38,069	3,748,069 84
" Agencies of the dept.....	7,475	556,306 82
Total departmental cheques.....	45,484	4,304,376 66
	Number of applications.	
Payments by Receiver General's cheque &c., &c. (as above).	652	2,187,896 86
Total expenditure for year.....		\$6,492,273 52

There are still a number of districts in which cheques do not readily pass current, and for work in these regions the system of paying through a paymaster still remains in vogue, but their area is constantly decreasing, and doubtless, within a few years, almost, if not all, the payments of the department will be made by direct cheque.

The adoption of this plan has considerably facilitated prompt payment on those works to which it has been applied, but during the past and current years, the increase in the number and magnitude of the works carried on by the department, has been such that this branch finds great difficulty in coping with the claims daily referred to it for immediate payment. This state of things causes much inconvenience to the creditors of the department. In my opinion, there is but one remedy, an increase in the staff by the addition of several competent clerks.

Subjoined are the usual tables showing the various sums expended during the fiscal year 1903-04, upon each of the works under control of this department, viz. :—

*Statement A*, giving for each work the amounts expended for construction and repairs severally, and for each province the total cost of staff and maintenance of public buildings.

*Statement B*, subsidiary to the above and giving separately for each building the cost of rent, salaries, heating, &c.

*Statement C*, showing amounts advanced by government for the construction of certain works of a semi public character, under statutory authority and after inspection by officers of this department.

I have the honour to be, sir,

Your obedient servant,

A. G. KINGSTON,

Accountant.



# STATEMENTS OF EXPENDITURE

DURING

FISCAL YEAR ENDED JUNE 30, 1904



STATEMENT A.—Showing the Amounts expended by the Department of Public Works of Canada during the fiscal year ending June 30, 1904.

Name of Work.	Construc- tion and Improvements.	Repairs. and Furniture.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia.</i>				
Amherst, post office, &c.		2,692 92		2,692 92
Annapolis, post office, &c.		135 08		135 08
Antigonish, post office, &c.		89 24		89 24
Arichat, post office, &c.		321 04		321 04
Baddeck, armoury, &c.	378 00			378 00
Baddeck, post office, &c.		26 09		26 09
Bridgewater, post office, &c.		376 13		376 13
Dartmouth, post office, &c.		18 95		18 95
Digby, post office, &c.	1,677 02	59 81		1,736 83
Guysboro', post office, &c.		1,515 59		1,515 59
Halifax Asst. Receiver General's office.		43 50		43 50
" custom house (New).	55,426 81			55,426 81
" Dominion Building.		1,375 40		1,375 40
" examining warehouse.		68 72		68 72
" immigrant shed.	2,340 59	473 48		2,814 07
" Lawlor's Island quar. station.	5,657 51			5,657 51
Kentville, post office, &c.		32 85		32 85
Liverpool, post office, &c.		25 40		25 40
Lunenburg, post office, &c.		370 62		370 62
Middleton armoury.	2,000 76			2,000 76
Nappan experimental farm.	465 20	152 60		617 80
New Glasgow post office.		14 50		14 50
North Sydney, post office.	81 51	56 64		138 15
Pictou custom house.		25 72		25 72
" post office.	711 23	107 33		818 56
Point Edward (Sydney) quarantine station.		68 70		68 70
Springhill post office, &c.		2,792 11		2,792 11
Sydney, post office, &c.	4,996 03	186 19		5,182 22
Sydney Mines post office, &c.	4,590 86			4,590 86
Truro, post office, &c.		83 87		83 87
Windsor, post office.		16 45		16 45
Yarmouth, post office, &c.		187 68		187 68
Heating, lighting, water, &c., for all buildings in Nova Scotia.			30,198 20	30,198 20
Totals, Nova Scotia.	78,325 52	11,316 61	30,198 20	119,840 35
<i>Prince Edward Island.</i>				
Charlottetown, Dominion building.	12,040 00	237 38		12,277 38
Montague, post office.		40 39		40 39
Summerside, post office.		120 49		120 49
Heating, lighting, water, &c., for all buildings in Prince Edward Island.			6,485 83	6,485 83
Totals, Prince Edward Island.	12,040 00	398 26	6,485 83	18,924 09
<i>New Brunswick.</i>				
Bathurst, post office, &c.		294 08		294 08
Campbellton, post office, &c.	4,078 74			4,078 74
Carleton, (St. John) post office.		67 65		67 65
Carried forward.	4,078 74	361 73		4,440 47

4-3 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improvements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
<b>PUBLIC BUILDINGS—Continued.</b>				
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>New Brunswick—Con.</i>				
Brought forward.....	4,078 74	361 73		4,440 47
Chatham, post office, &c.....		77 10		77 10
" quarantine station.....		43 74		43 74
Dalhousie, post office, &c.....		102 44		102 44
Fredericton, post office, &c.....		189 52		189 52
" military building.....	4,898 30			4,898 30
Marysville, post office.....		277 17		277 17
Moncton, post office.....	841 93	229 62		1,071 55
Newcastle, post office.....	799 96	10 98		810 94
North Head (Grand Manan), post office.....		155 15		155 15
Partridge Island quarantine station.....	2,827 04	12 45		2,839 49
Portland (St. John) post office.....		6 00		6 00
Richibucto, post office.....	10,042 49			10,002 49
St. John, custom house.....		1,821 55		1,821 55
" immigration building.....		1,713 78		1,713 78
" post office.....		982 58		982 58
" savings bank.....		108 20		108 20
St. Stephen's, post office, &c.....		20 95		20 95
Sussex, armoury.....	3,616 56			3,616 56
" post office, &c.....		1,178 14		1,178 14
Tracadie lazaretto.....	320 86			320 86
Woodstock, armoury.....	6,106 90			6,106 90
" post office, &c.....	2,821 77	26 74		2,848 51
Heating, lighting, water, &c., for all buildings in New Brunswick.....			25,834 29	25,834 29
Totals, New Brunswick.....	36,033 69	7,638 70	25,834 29	69,506 68
<i>Maritime Provinces.</i>				
Generally.....			379 61	379 61
<i>Quebec.</i>				
Acton Vale, post office.....	2,245 36			2,245 36
Aylmer, post office.....		397 35		397 35
Berthierville, post office.....		69 25		69 25
Buckingham, public building.....		48 66		48 66
Coaticook, public building.....		5 55		5 55
Drummondville public building.....		142 32		142 32
Dundee, custom house.....		35 00		35 00
Granby, public building.....		375 92		375 92
Grosse Isle, quarantine station.....	11,994 76	221 56		12,216 32
Fraserville, public building.....		105 34		105 34
Hochelaga, post office.....		284 21		284 21
Hull, post office.....		224 25		224 25
Joliette, post office.....		609 11		609 11
Lachine, post office.....		59 02		59 02
Laprairie, post office.....		79 01		79 01
L'Assomption, post office.....	9,975 10			9,975 10
Lévis, cattle quarantine.....		1,390 18		1,390 18
Lévis, immigrant building.....		50 00		50 00
Lévis, post office.....	157 30			157 30
Longueuil, post office.....	2,838 05			2,838 05
Montmagny, post office.....	205 08	16 24		221 32
Montreal, custom house.....		7,750 38		7,750 38
" examining warehouse.....	16,623 00	18,972 94		35,595 94
" immigration office.....		133 00		133 00
" inland revenue office.....		735 53		735 53
" post office.....	13,046 76	4,868 34		17,915 10
" " power for elevators.....			3,000 08	3,000 08
" new postal station (St. Catherine Street).....		3,168 55		3,168 55
Quebec, citadel buildings.....		2,225 57		2,225 57
Carried forward.....	57,085 41	41,967 28	7,000 08	102,052 77

## SESSIONAL PAPER No. 19

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
PUBLIC BUILDINGS— <i>Continued.</i>				
Brought forward, . . . . .	57,985 41	41,967 28	3,000 08	102,952 77
<i>Quebec—Concluded.</i>				
Quebec, clerk of works office, P. O. . . . .		64 20		64 20
" culler's office . . . . .		2 24		2 24
" custom house . . . . .		662 99		662 99
" engineer's office . . . . .		5 93		5 93
" examining warehouse . . . . .		1,561 94		1,561 94
" King's Wharf building (Marine Dept.). . . . .		889 50		889 50
" immigration building (Louise Embankment). . . . .		1,862 48		1,862 48
" immigration office . . . . .		37 00		37 00
" " hospital for trachoma . . . . .	12,000 18			12,000 18
" observatory . . . . .		22 35		22 35
" post office . . . . .		3,648 31		3,648 31
" " power for elevator . . . . .			200 00	200 00
" military buildings:				
artillery workshops. . . . .	2,967 67			2,967 67
iron foundry . . . . .	1,051 19			1,051 19
Quebec, St. Roch post office . . . . .		35 59		35 59
Peribonka, immigrant shed . . . . .		16 53		16 53
Richmond, public building . . . . .		401 67		401 67
Rimouski " . . . . .		119 08		119 08
Roberval, immigration shed . . . . .		52 07		52 07
Sherbrooke, drill hall . . . . .	4,519 70			4,519 70
" " post office, &c. . . . .		292 41		292 41
Sorel, post office, &c. . . . .		979 35		979 35
St. Henri, post office . . . . .		217 73		217 73
St. Hyacinthe, drill hall . . . . .	7,533 40			7,533 40
" " public building. . . . .	11,978 38	423 67		12,402 05
St. Jérôme " . . . . .		127 69		127 69
St. John's " . . . . .	38 40	6 00		44 40
St. Louis du Mile End, post office . . . . .	5,487 43			5,487 43
Terrebonne, post office, &c. . . . .	1,584 95			1,584 95
Thetford Mines, post office, &c. . . . .	7,530 91	287 32		7,530 91
Three Rivers custom house . . . . .	4,472 41	1,407 31		4,759 73
" " post office . . . . .				1,407 31
Valleyfield post office, &c. . . . .	14,951 44	13 55		14,964 99
Victoriaville " . . . . .		363 69		363 69
West Farnham post office . . . . .		74 73		74 73
Quebec generally . . . . .			546 34	546 34
Heating, lighting, water, &c., for all buildings in Que- bec. . . . .			85,725 20	85,725 20
Totals, Quebec . . . . .	131,201 47	55,542 61	89,471 62	276,215 70
<i>Ontario.</i>				
Alexandria post office, &c . . . . .	8,710 97			8,710 97
Almonte post office, &c. . . . .	968 50	16 50		985 00
Amherstburg post office . . . . .		224 43		224 43
Arnrior " " . . . . .	800 00	56 79		856 79
Barrie " " . . . . .		155 64		155 64
Belleville " " . . . . .		551 95		551 95
Berlin " " . . . . .	9,073 30	3 80		9,077 10
Bowmanville " " . . . . .	9,984 04			9,984 04
Brampton " " . . . . .		518 55		518 55
Brantford drill hall . . . . .		4,487 28		4,487 28
" " post office, &c. . . . .		217 75		217 75
Brideburg " " . . . . .	827 47			827 47
Brockville " " . . . . .		461 70		461 70
" " drill hall. . . . .	651 55			651 55
Carleton Place post office, &c . . . . .		117 80		117 80
Carried forward, . . . . .	31,015 83	6,812 19		37,828 02

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improvements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
<b>PUBLIC BUILDINGS—<i>Continued.</i></b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>
Brought forward.....	31,015 83	6,812 19		37,828 02
<b>Ontario—Continued.</b>				
Cayuga post office, &c.....		5 90		5 90
Chatham armoury.....	40 75			40 75
" post office, &c.....		1,133 56		1,133 56
Clinton " ".....	8,778 37	50 25		8,828 62
Cobourg armoury.....	14,999 57	6 00		15,005 57
Cobourg post office, &c.....	3,545 80	95 16		3,640 96
Cornwall " ".....		1,626 45		1,626 45
Deseronto armoury.....	41 00			41 00
" post office, &c.....	1,535 07	317 72		1,852 79
Dundas armoury.....	8,146 75	11 20		8,157 95
" post office, &c.....		16 00		16 00
Fort William post office, &c.....	22,334 67			22,334 67
Galt " ".....		41 57		41 57
Gananoque " ".....		17 00		17 00
Goderich " ".....		484 78		484 78
Guelph armoury.....	5,499 95			5,499 95
" post office, &c.....	18,937 40	12 74		18,950 14
Hamilton Immigrant shed.....		5 00		5 00
Hamilton post office.....	5,804 28	539 64		6,343 92
" " " power for elevators.....			45 00	45 00
Hawkesbury post office, &c.....	3,006 40			3,006 40
Ingersoll " ".....		561 07		561 07
Kingston custom house.....		2,708 32		2,708 32
" drill hall, &c.....	789 54			789 54
" exam. warehouse.....		131 43		131 43
" inland revenue office.....		46 34		46 34
" military college.....	5,020 20			5,020 20
" post office.....		739 05		739 05
Lindsay post office, &c.....		150 40		150 40
London custom house.....		741 03		741 03
" drill hall and armoury.....	60,098 97			60,098 97
" post office.....		2,330 29		2,330 29
Napanee post office, &c.....		565 81		565 81
Niagara Fall, public building.....		353 84		353 84
Orillia, post office, &c.....		34 85		34 85
Oshawa " ".....	3,018 75			3,018 75
Ottawa, astronomical observatory.....	44,958 52			44,958 52
" departmental buildings (Western).....	5,963 21			5,963 21
" experimental farm.....	5,626 00	3,087 81		8,713 81
" government printing bureau.....	6,960 85			6,960 85
" major's hill park.....			5,561 62	5,561 62
" militia stores building.....	1,522 62			1,522 62
" national art gallery.....	1,475 00		748 25	2,223 25
" new government coal shed.....	944 41			944 41
" parliament building.....	16,851 79			16,851 79
" post office.....	20,474 67			20,474 67
" Rideau hall.....	2,972 50	17,171 36		20,143 86
" " grounds \$4,944 07; snow \$1,230 34; fuel and light \$8,000 00; watch- man \$549 00.....			14,723 41	14,723 41
" royal mint.....	9 40			9 40
" Victoria memorial museum.....	76,041 44			76,041 44
" generally: parliament grounds.....			8,026 15	8,026 15
" " power for elevators.....			2,968 75	2,968 75
" " removal of snow.....			2,770 42	2,770 42
" " repairs and furniture.....		161,520 83		161,520 83
" " telephone service.....			7,065 32	7,065 32
Owen Sound, post office, &c.....		428 40		428 40
Paris " ".....		22 30		22 30
Pembroke, post office.....		46 80		46 80
Carried forward.....	376,413 71	201,815 09	41,908 92	620,137 72

## SESSIONAL PAPER No. 19

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
	§ cts.	§ cts.	§ cts.	§ cts.
<b>PUBLIC BUILDINGS—<i>Continued.</i></b>				
Brought forward.....	376,413 71	201,815 09	41,908 92	620,137 72
<i>Ontario</i> Concluded.				
Perth, inland revenue office.....		47 50		47 50
Peterboro', custom house.....		103 30		103 30
" post office.....		185 48		185 48
Petrolia ".....		22 61		22 61
Pictou ".....	903 06	139 00		1,042 06
Port Arthur, immigrant shed.....		309 31		309 31
" post office.....		271 24		271 24
Port Colborne ".....		76 49		76 49
Port Hope ".....		1,290 50		1,290 50
Prescott, custom house.....		102 37		102 37
" post office.....		140 11		140 11
Rat Portage, public building.....		243 98		243 98
Sarnia ".....	13,800 16	3 45		13,803 61
Sault Ste. Marie, post office, &c.....	24,984 03			24,984 03
Smith's Falls, post office.....		6 75		6 75
Stratford, public building.....		120 74		120 74
Strathroy ".....		3 67		3 67
St. Catharines, drill hall.....	9,114 50			9,114 50
" post office, &c.....		177 15		177 15
St. Thomas ".....		181 52		181 52
Toronto, asst. rec. gen. office.....	2,100 00	569 49		2,669 49
" custom house.....	10,055 54	929 27		10,984 81
" drill shed.....	1,362 69	322 45		1,685 14
" examining warehouse.....	5,035 56	891 55		5,927 11
" post office.....	19,130 00	21,264 37		40,394 37
" " power for elevators.....			479 72	479 72
" postal station "A".....		901 43		901 43
" " "B".....		185 18		185 18
" " "C".....	1,204 06			1,204 06
" Junction, post office.....	14,998 42			14,998 42
Trenton, post office, &c.....		9 65		9 65
Walkerton ".....		8 68		8 68
Windsor ".....	831 10	580 64		1,411 74
Wingham ".....	5,250 98			5,250 98
Woodstock ".....	4,545 58	568 13		5,113 71
" armoury.....	33 35			33 35
Ontario generally.....			1,226 03	1,226 03
Heating, lighting, water, &c., for all buildings in Ontario.....			249,824 59	249,824 59
<b>Totals, Ontario.....</b>	<b>489,762 74</b>	<b>231,471 10</b>	<b>293,439 26</b>	<b>1,014,673 10</b>
<i>Manitoba.</i>				
Brandon, experimental farm.....	122 35	263 25		385 60
" post office, &c.....		563 45		563 45
Dauphin, immigrant shed.....	245 00	453 90		698 90
East Selkirk, immigration building.....		2,537 08		2,537 08
Portage La Prairie post office.....		28 15		28 15
Winnipeg custom house.....		211 33		211 33
" Dominion lands office.....		71 00		71 00
" examining warehouse.....		399 70		399 70
" immigrant shed.....	489 79	1,347 20		1,836 99
" post office.....	5,569 25	4,895 69		10,464 94
" " power for elevators.....			53 60	53 60
" " new building.....	34,500 00			34,500 00
Manitoba generally.....			178 22	178 22
Heating, lighting, water, &c., for all buildings in Manitoba.....			23,336 02	23,336 02
<b>Totals, Manitoba.....</b>	<b>40,926 39</b>	<b>10,770 75</b>	<b>23,587 84</b>	<b>75,284 98</b>

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of work.	Construc- tion and Improvements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>North-west Territories.</i>				
Battleford Dominion lands office.....		272 00		272 00
Cattle Quarantine, Corrals at various points.....	1,000 00			1,000 00
Calgary court house, &c.....	120 00	320 49		440 49
" immigrant building.....		408 45		408 45
" post office.....	778 37	265 51		1,043 88
Carnduff, court house.....	304 98	313 19		618 17
Craik immigrant shed.....	1,168 90			1,168 90
Davidson immigrant shed.....	2,025 00			2,025 00
Duck Lake immigrant shed.....	1,564 17			1,564 17
Edmonton court house.....		381 75		381 75
" Dom. lands & registry office.....		280 65		280 65
" jail.....	15,083 77			15,083 77
" post office.....		67 48		67 48
Indian Head experimental farm.....		169 17		169 17
Lethbridge court house & custom house.....		21 90		21 90
" immigration building.....		26 25		26 25
" post office.....		61 00		61 00
Lloydminster immigrant shed.....	17,746 03			17,746 03
Macleod custom house.....		159 50		159 50
" court house.....	9,999 86			9,999 86
Medicine Hat court house.....		331 15		331 15
Moose Jaw court house.....	7 00	167 56		174 56
" post office.....	33 56			33 56
Moosomin court house.....		360 04		360 04
Prince Albert court house and post office.....	22 00	6 00		28 00
" Dom. lands and reg. office.....		44 20		44 20
Red Deer court house and Dominion lands office.....	4,454 59			4,454 59
Regina court house.....		445 31		445 31
" Dominion lands and registry office.....		1,067 02		1,067 02
" immigrant building.....	4,498 50			4,498 50
" Lt. Governor's residence.....		522 55		522 55
" N.W. M. Police barracks.....	1,570 00			1,570 00
" post office.....	430 00	566 08		996 08
Rosthern immigrant shed.....	249 15			249 15
Saltcoats immigrant shed.....	156 67			156 67
Saskatoon " ".....	411 68			411 68
Strathcona immigrant shed.....	593 42			593 42
Wolsley court house.....		102 15		102 15
Yorkton, court house and jail.....	6,098 70			6,098 70
North-west Territories generally.....			9 50	9 50
Heating, lighting, water, &c., for all buildings in N.W.T.....			22,472 66	22,472 76
Totals, North-west Territories.....	68,316 35	6,359 40	22,482 16	97,157 91
<i>British Columbia.</i>				
Agassiz experimental farm.....	216 44			216 44
Athln, post office, &c.....	221 20	67 50		288 70
Kamloops, armoury.....	2,820 31			2,820 31
" post office, &c.....	1,703 75	355 89		2,059 64
Kaslo, drill hall.....	3,418 76			3,418 76
Nanaimo, post office.....	8,256 70	54 76		8,311 46
Nelson, post office, &c.....	18,194 17	35 40		18,249 57
" drill hall.....	950 87			950 87
New Westminster, post office.....	600 00	262 45		862 45
Revelstoke, drill hall.....	2,977 33			2,977 33
Rossland, post office, &c.....	7,978 48	156 70		8,135 18
" armoury.....	583 57			583 57
Vancouver, drill hall.....	2,000 00			2,000 00
" post office.....	1,585 00	2,104 24		3,689 24
" " new building.....	52,000 00			52,000 00
Carried forward.....	103,506 58	3,056 94		106,563 52



## SESSIONAL PAPER No. 19

PART II.—STATEMENT A.—EXPENDITURE—*Continued*

Name of work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>PUBLIC BUILDINGS—<i>Continued.</i></b>				
Brought forward.....	103,506 58	3,056 94		106,563 52
<i>British Columbia—Concluded.</i>				
Victoria, drill hall.....	568 51			568 51
" indian office.....		771 99		771 99
" post office.....		1,841 20		1,841 20
" " power for elevators.....			224 24	224 24
" old post office.....	2,210 96			2,210 96
William's Head, quarantine station ..	5,999 13		402 00	6,401 13
British Columbia, generally ..			1,193 21	1,193 21
Heating, lighting, water, &c., for all buildings in British Columbia.....			23,823 28	23,823 28
Totals, British Columbia .....	112,285 18	5,670 13	25,642 73	143,598 04
<i>Yukon District.</i>				
Yukon public buildings.....			53,675 28	53,675 28
<i>Public buildings generally.</i>				
Salaries of clerks of works and assistants.....			11,808 44	11,808 44
Printing, stationery, instruments, travelling, &c.....			9,217 81	9,217 81
Totals, public buildings generally.....			21,026 25	21,026 25

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>HARBOURS AND RIVERS.</b>					
<i>Nova Scotia.</i>					
Abbott's Harbour		625 58			625 58
Abram's River		1,037 89			1,037 89
Amaguadees		3,460 97			3,460 97
Arisaig			2,488 62		2,488 62
Babin's Cove			99 34		99 34
Bailey Brook		2,742 58			2,742 58
Barrington (Skerrow-Channel)	8,738 65				8,738 65
Bayfield			6,789 83		6,789 83
Benoit Cove		799 91			799 91
Big Pond		154 47			154 47
Boularderie Centre		669 98			669 98
Breton Cove		299 23			299 23
Cariboo Island		1,552 07			1,552 07
Chebogue			67 77		67 77
Cheggogin Pier		188 67			188 67
Cheticamp (Eastern Harbour)	6,540 06				6,540 06
Cheticamp Point-wharf		1,223 49			1,223 49
Cheverie breakwater		1,486 39			1,486 39
Church Point			2,995 21		2,995 21
Cow Bay (Port Morien)			21,266 79		21,266 79
Cow Bay Run breakwater		2,063 94			2,063 94
D'Escousse wharf			76		76
Devils Island			252 55		252 55
Digby pier			313 15		313 15
Donalds Head breakwater			2,218 54		2,218 54
Drum Head breakwater		4,620 00			4,620 00
East Bay (repairs to wharf)			263 73		263 73
East Chezzetcook			55 00		55 00
East River, sheet harbour		360 88			360 88
East Berlin breakwater		692 93			692 93
East Jeddore wharf		1,452 78			1,452 78
Economy wharf		2,079 11			2,079 11
Finlay's Point wharf		1,466 22			1,466 22
Five Island wharf			699 97		699 97
Fort Lawrence, landing pier		3,769 25			3,769 25
Friars' Head, boat harbour		578 96			578 96
Fruids Point wharf		1,425 20			1,425 20
Georgeville wharf		2,499 70			2,499 70
Grand Etang harbour		2,279 78			2,279 78
Grand Narrows wharf			2,478 79		2,478 79
Grand River		648 41			648 41
Granville Centre			199 50		199 50
Great Tancook Island			239 58		239 58
Green Cove		6,432 50			6,432 50
Halifax graving dock				10,000 00	10,000 00
Hampton			49 99		49 99
Harbourville			499 71		499 71
Hawk Point inlet		500 04			500 04
Herring Cove (Halifax Co.)		8,159 00			8,159 00
Hortons Landing			70 20		70 20
Iona wharf		684 45			684 45
Indian Brook Flats, Cape Sable Island, wharf		672 90			672 90
Ingonish (North Bay)		542 76			542 76
Island Point, wharf			915 31		915 31
Janvrin's Island		24 20			24 20
Judique, breakwater			398 48		398 48
Kingsport			5,052 61		5,052 61
L'Ardoise, breakwater		104 27			104 27
Larry's River, breakwater		13,627 50			13,627 50
Lingan, beach protection		998 05			998 05
Little Harbour, (or Arnold Point)		2,013 49			2,013 49
Carried forward	15,278 71	71,937 55	47,415 43	10,000 00	144,631 69

## SESSIONAL PAPER No. 19

PART II.—STATEMENT A.—EXPENDITURE.—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>HARBOURS AND RIVERS—<i>Con.</i></b>					
Brought forward.....	15,278 71	71,937 55	47,415 43	10,000 00	144,631 69
<i>Nova Scotia—Con.</i>					
Liverpool.....	4,945 28				4,945 28
Livingston's Cove.....			1,800 00		1,800 00
Lockeport, beach protection.....		225 56			225 56
Lower Washabuck.....		399 81			399 81
Lower West Pubnico.....		895 62			895 62
McKay's Point, wharf.....		191 15			191 15
McNair's Cove.....		4,768 13			4,768 13
McNutt's Island.....		489 28			489 28
Mabou Harbour.....	3,842 86		399 90		4,242 85
Malagawatch.....		299 99			299 99
Main a Dieu, breakwater.....		98 45			98 45
Malignant Cove.....			1,099 07		1,099 07
Margaree Harbour.....		799 94			799 94
Margaretville.....			510 72		510 72
Melborne wharf.....		715 52			715 52
Meteghan (Cove).....			2,342 31		2,342 31
Meteghan River.....			300 99		300 99
Middle River.....		1,405 35			1,405 35
Minudie wharf.....			132 25		132 25
Musquodoboit.....		271 39			271 39
Necum Teuch wharf.....		4,421 45			4,421 45
Neil's Harbour, breakwater.....		3,180 00			3,180 00
Newellton.....			235 21		235 21
New Harbour, breakwater, &c.....			741 74		741 74
North Gut, St. Anns.....			85 03		85 03
North River, St. Anns.....			689 68		689 68
Ogden's Pond.....		1,449 87			1,449 87
Parker's Cove.....			1,191 10		1,191 10
Parrsboro'.....		922 10			922 10
Patridge Island.....			75 65		75 65
Pembroke, breakwater.....		4,006 81			4,006 81
Petit de Grat.....			3,022 81		3,022 81
Pickett's Pier.....			2,369 65		2,369 65
Pictou.....	6,924 98				6,924 98
Pictou Island.....			71 00		71 00
Pinkney's Point.....			68 26		68 26
Pleasant Bay.....		71 85			71 85
Poirierville or Lower d'Escousse.....		4,608 00			4,608 00
Porter's Lake.....		325 15			325 15
Port au Pique.....		543 62			543 62
Port Bevis (Big Harbour).....		151 86			151 86
Port George breakwater.....		5,807 95			5,807 95
Port Greville.....			697 59		697 59
Port Hawkesbury.....		8,122 50			8,122 50
Port Hood.....	2,078 58	2,968 85	1,500 09		6,547 52
Port Howe, wharf.....		1,964 19			1,964 19
Port La Tour, breakwater.....		1,097 64			1,097 64
Port Maitland.....		1,503 25			1,503 25
Poulamond.....			334 97		334 97
Prospect, wharf.....		453 62			453 62
Ragged Head, boat harbour.....		200 00			200 00
Red Head.....			400 04		400 04
Sandy Cove, breakwater.....		9,232 00			9,232 00
Scott's Bay.....		1,346 52			1,346 52
Shag Harbour.....		337 63			337 63
Short Beach.....		6,799 00			6,799 00
Sight Point.....			82 06		82 06
South Gut, St. Anns.....			493 21		493 21
South Ingomish wharf.....		2,590 00			2,590 00
Spry Bay wharf.....		508 94			508 94
Carried forward.....	33,070 41	145,200 54	65,998 85	10,000 00	254,269 80

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
<b>HARBOURS AND RIVERS—<i>Con.</i></b>	<b>£ cts.</b>	<b>£ cts.</b>	<b>£ cts.</b>	<b>£ cts.</b>	<b>£ cts.</b>
Brought forward . . . . .	33,070 41	145,260 54	65,998 85	10,000 00	254,269 80
<i>Nova Scotia—Con.</i>					
Swim's Point wharf . . . . .		1,214 56			1,214 56
Sydney quarantine station . . . . .			1,566 04		1,566 04
Tenacape breakwater . . . . .		2,019 48			2,019 48
Tidnish . . . . .			374 59		374 59
Tiverton, breakwater . . . . .		15,308 00			15,308 00
Tracadie, breakwater . . . . .			425 28		425 28
Upper Port Latour . . . . .		800 00			800 00
Victoria Beach, wharf . . . . .		120 27			120 27
Washabuck Centre wharf . . . . .		6,055 00			6,055 00
Wedge Point . . . . .		1,701 61			1,701 61
West Baccaro . . . . .		3,500 00			3,500 00
West Bay, Richmond (South Side) wharf . . . . .		1,747 98			1,747 98
West Chezzetcook breakwater . . . . .			44 74		44 74
Western Head . . . . .		3,653 85			3,653 85
West Woods Harbour . . . . .		686 93			686 93
Whitehaven . . . . .			500 79		500 79
White's Cove . . . . .		1,839 66			1,839 66
Windsor Harbour . . . . .			98 71		98 71
Wolville Wharf . . . . .			1,768 89		1,768 89
Yarmouth . . . . .	1,123 46		325 57		1,449 03
Generally, Nova Scotia . . . . .				4,151 26	4,151 26
<b>Totals, Nova Scotia . . . . .</b>	<b>34,193 87</b>	<b>183,847 88</b>	<b>71,103 46</b>	<b>14,151 26</b>	<b>303,296 47</b>
<i>Prince Edward Island.</i>					
Bay Fortune breakwater . . . . .			149 98		149 98
Bay View . . . . .			47 61		47 61
Beach Point . . . . .		334 49			334 49
Belfast (Halliday's wharf) . . . . .	2,946 54				2,946 54
Campbell's Cove . . . . .			94 89		94 89
Cascompec harbour . . . . .		1,072 75			1,072 75
China Point . . . . .			125 56		125 56
Cove Head harbour . . . . .		5,917 40			5,917 40
Crapaud . . . . .			57 75		57 75
Gaspereau . . . . .		499 84			499 84
Lambert's Pier . . . . .	2,946 54	7,824 48	475 79		11,246 81
Lewis Point . . . . .			1,088 93		1,088 93
Lower Montague (Aitkin's wharf) . . . . .		2,174 80			2,174 80
Mimigash . . . . .			350 15		350 15
Morell . . . . .	1,967 13				1,967 13
New London . . . . .		781 11	477 15		1,258 26
North Cardigan Pier . . . . .		2,699 88			2,699 88
Point Prim wharf . . . . .		396 04			396 04
Richmond Bay . . . . .		1,335 62			1,335 62
Rustico harbour . . . . .		23 60			23 60
St. Peter's Bay breakwater . . . . .		1,557 50			1,557 50
Souris, Knight's Point . . . . .			9,468 09		9,468 09
Summerside harbour . . . . .		12,510 53			12,510 53
Sungon Pier . . . . .			59 62		59 62
Tidnish, rebuilding northern breakwater . . . . .		699 93			699 93
Vernon River . . . . .	8,871 00		299 26		9,170 26
Victoria Pier . . . . .			26 94		26 94
Wood Islands . . . . .		884 50			884 50
West Point wharf . . . . .			1,438 81		1,438 81
Harbours generally (P.E.I.) . . . . .				2,516 24	2,516 24
<b>Totals, P.E. Island . . . . .</b>	<b>13,784 67</b>	<b>30,887 99</b>	<b>13,684 74</b>	<b>2,516 24</b>	<b>60,873 64</b>

## SESSIONAL PAPER No. 19

## PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—Con.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>New Brunswick.</i>					
Anderson's Hollow .....			1,797 22		1,797 22
Bay du Vin, wharf .....		365 00			365 00
Belliveau, wharf .....			750 00		750 00
Black Brook (Loggieville) .....		5,060 96			5,060 96
Buctouche wharf .....			2,438 93		2,438 93
Burnt Church .....			321 82		321 82
Campbellton, Ferry wharf .....		3,100 00			3,100 00
" wharf extension and repairs .....			4,584 18		4,584 18
Campobello (Wilson's Beach) .....			8,055 40		8,055 40
Cape Tormentine .....		10,109 42			10,109 42
Caraquet .....	6,316 53	11,629 00			17,945 53
Chatham .....	905 60				905 60
Chockfish, extension of training pier .....		1,993 80			1,993 80
Clifton (Stonehaven) .....		2,289 50			2,289 50
Cocagne wharf .....				250 00	250 00
Dalhousie, harbour improvement .....		123 72			123 72
Dipper Harbour .....		493 04			493 04
Edgett Landing .....			410 00		410 00
Gagetown .....	1,772 18				1,772 18
Grand Anse .....		2,515 69			2,515 69
Grand Lake (Jemseg Channel) .....	4,760 88				4,760 88
" (Newcastle) .....	1,336 06				1,336 06
Hopewell Cape .....			4,641 83		4,641 83
" Hill .....		244 56			244 56
Little Salmon River .....			634 78		634 78
Lord's Cove—Deer Island .....		1,050 00			1,050 00
Miscou Harbour—wharf .....		73 72			73 72
Mispec Harbour .....		991 68			991 68
Neguac .....	8,592 33				8,592 33
Neguac (Miramichi) .....	1,050 70				1,050 70
North Head Grand Manan b/water whf. .....		42 67			42 67
Partridge Island .....			500 00		500 00
Petit Rocher—breakwater .....		351 65			351 65
Point du Chene .....	1,705 96				
Less repaid by I.C. Ry. ....	315 00				
	1,390 96				1,390 96
Point du Chene breakwater .....			1,746 68		1,746 68
Quaco .....			450 08		450 08
Red Store (wharf) St. George .....			150 78		150 78
Richibucto .....	9,549 12	1,589 67			11,138 79
" River .....			583 00		583 00
River St. John—Including tributaries—					
Edmonston .....	4,551 19				
Grand Falls .....	4,525 58				
" breakwater .....	1,284 49				
Grand River Madawaska .....	250 00				
Iroquois .....	275 76				
Little Tobique .....	399 00				
" Forks .....	100 00				
Madawaska .....	358 62				
Main River .....	110 65				
Serpentine River .....	400 00				
Tobique River .....	548 00				
" Rocks .....	460 61				
St. Francis River .....	450 19				
St. John River improvem. ....	256 23				
Mouth of Salmon River to mouth of Crookston River .....	200 00				
Between Fredericton and Woodstock .....	137 76				
Generally .....	886 07				
		15,194 20			15,194 20
Carried forward .....	35,674 36	57,218 28	27,064 70	250 00	120,207 34

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and improvements.	Repairs.	Staff and Maintenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
HARBOURS AND RIVERS— <i>Con.</i>					
Brought forward.....	35,674 36	57,218 28	27,064 70	250 00	120,207 34
<i>New Brunswick—Con.</i>					
River St. John, wharfs in tidal water—					
Belycas.....	349 13				
" Cove (Wickham)....	231 00				
Burton.....	180 00				
Cedars.....	309 00				
Clifton.....	60 85				
Coles Island.....	388 50				
Courthouse.....	240 00				
Brown's Flats.....	362 14				
Dunbains.....	546 00				
Flewelling.....	288 73				
" (Westfield).....	240 80				
Gerows.....	341 25				
Hatfield Point.....	379 91				
Holderville.....	436 49				
Humphreys Point.....	308 18				
Jenkins Cove.....	426 03				
McGowan (high water)....	161 09				
Oak Point.....	182 70				
Oromocto.....	208 23				
Parkers.....	258 75				
" (low water).....	284 18				
Sewells.....	276 50				
Thomsons.....	76 01				
Topleys.....	155 65				
Upper Gagetown.....	482 00				
Wickham.....	550 02				
		7,813 14			7,813 14
River St. John (wharf at Oromocto)....	4,577 67	6,618 25			11,195 92
St. John Harbour (Negro Point b'water)		12,173 43			12,173 43
St. John Harbour—dredging.....	14,502 94				14,502 94
St. John Harbour, protection work at base of Fort Dufferin.....			3,499 66		3,499 66
St. Nicholas River.....			97 00		97 00
Shippegan Harbour.....			1,097 85		1,097 85
Shippigan, (wharf at Lameque).....		1,630 00			1,630 00
Springhill (York Co).....	1,586 72				1,586 72
Tracadie.....			844 66		844 66
Tynemouth Creek.....			1,001 00		1,001 00
Upper Salmon River (Alma Pier).....		3,455 00			3,455 00
Generally.....				4,151 26	4,151 26
Totals, New Brunswick.....	56,341 69	88,908 10	33,604 87	4,401 26	183,255 92
<i>Quebec.</i>					
Anse à Beaufils.....			496 80		496 80
Anse aux Gascons.....		2,765 50			2,765 50
Anse aux Grip Fonds.....		1,999 06			1,999 06
Anse St. Jean.....		3,048 04			3,048 04
Baie St. Paul, repairs to wharf at Cap aux Corbeaux.....			3,279 66		3,279 66
Baie des Rochers.....			620 97		620 97
Barachois de Malbaie.....		225 21			225 21
Beauharnois.....			1,261 50		1,261 50
Bekeil guide piers.....	8,012 67				8,012 67
Bergeronnes.....			25 60		25 60
Berthier (en haut).....			494 69		494 69
Berthier (en bas).....			447 96		447 96
Bic, pier at Pointe à Côté, &c.....			1 58		1 58
Bois Brûlé, training pier.....		1,704 24			1,704 24
Carried forward.....	8,012 67	9,742 05	6,628 76		24,383 48

## SESSIONAL PAPER No. 19

## PART II.—STATEMENT A—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS— <i>Con.</i>	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.
Brought forward.....	8,012 67	9,742 05	6,628 76		24,383 48
<i>Quebec Con.</i>					
Bonaventure East Water .....		5,000 03			5,000 03
Boucherville.....			10 40		10 40
Cacouna.....		2,298 35			2,298 35
Caplan, breakwater.....		5,118 80			5,118 80
Cedars.....			552 21		552 21
Cap de la Madeline.....			799 49		799 49
Cap Santé.....			16 20		16 20
Chambord wharf.....		1,541 67			1,541 67
Champlain wharf.....			4,628 07		4,628 07
Chateau Richer.....		8 00			8 00
Coteau du Lac.....			914 36		914 36
Chicoutimi wharf.....			1,045 03		1,045 03
Coteau Landing.....	1,908 00		190 47		2,098 47
Crane Island, South Side.....			3,096 07		3,096 07
Cross Point.....		5,755 00			5,755 00
Deschambault wharf.....		2,972 00			2,972 00
Desjardins, Alouet Island wharf.....		113 41			113 41
Doucets Landing.....	11,800 15				11,800 15
Douglstown.....		1,048 91			1,048 91
East Templeman wharf.....		33 92			33 92
English River.....		2,865 89	9 80		2,875 69
Escoumains.....		499 38			499 38
Father Point, landing pier.....		39,162 26			39,162 26
Gatineau River, protection east bank.....		2,845 15	17 54		2,862 69
Georgeville.....			78 57		78 57
Graham wharf.....	11,851 60				11,851 60
Grande Rivière wharf.....		765 79			765 79
Grands Mechains.....		242 74			242 74
Grandes Bergeronnes.....			224 38		224 38
Grande Vallée, pier.....		19,830 00			19,830 00
Grondines wharf.....		4,395 60			4,395 60
Hudson wharf.....		1,230 82			1,230 82
Hull wharf.....			40 79	28 00	68 79
Iberville.....			412 84		412 84
Isle aux Coudres.....		2,042 94			2,042 94
Isle Perrot.....			437 80		437 80
Isle Verte.....		800 00			800 00
Kamouraska.....		3,915 81			3,915 81
Knowltons Landing.....			176 52		176 52
Lake Megantic.....			51 13		51 13
Lake St. John wharfs—					
Grand Decharge.....			182 17		182 17
St. Methode.....			792 08		792 08
Generally.....				824 35	824 35
Lake St. John dredging—					
Roberval.....	3,445 11				3,445 11
Generally.....				8 66	8 66
Lake Nemiquing.....		2,017 22			2,017 22
Lanoraie.....			10 61		10 61
L'Assomption.....	209 00				209 00
Laprairie, ice piers &c.....		14,951 00			14,951 00
Les Eboulements.....			394 73		394 73
Levis graving dock.....				15,223 50	15,223 50
Le Tableau, Descente des Femmes, wharf on River Saguenay.....		3,018 33			3,018 33
L'Isle d'Alma, removal of rock.....		1,501 97			1,501 97
L'Islet.....			496 17		496 17
Lotbinière.....		6,971 97			6,971 97
Lower St. Lawrence, removal of rock—Anse à Beaufils.....			100 00		100 00
Carried forward.....	37,226 53	140,689 01	21,306 19	16,084 51	215,306 24

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
HARBOURS AND RIVERS— <i>Con.</i>					
Brought forward.....	37,226 53	130,689 01	21,306 19	16,084 51	215,306 24
Quebec— <i>Con.</i>					
Lower St. Lawrence—					
Cap Blanc Percé.....			11 01		11 01
Cape Cove.....			100 00		100 00
Cap des Rosiers.....			101 19		101 19
Cap Madeleine.....			50 00		50 00
Cap Rouge.....			50 00		50 00
Chlorydornes.....			267 21		267 21
Grandes Bergeronnes.....			298 65		298 65
Lake Beaulieu.....			297 76		297 76
Little Fox River.....			50 00		50 00
Little Valley.....			50 00		50 00
Petite anse Chlorydornes.....			109 26		109 26
Petite Tourelle.....			100 00		100 00
Percé.....			289 20		289 20
Percé, Red Head.....			287 62		287 62
Petite Rivière.....			125 00		125 00
Rivière Ste. Anne.....			164 00		164 00
Roches Noires, Petite Rivières.....			50 00		50 00
St. Anne des Monts.....			189 90		189 90
Magdalen Islands, breakwaters.....					
Amherst.....		4,476 32			4,476 32
Grand Entry.....		26 00			26 00
Grindstone.....		9,408 76			9,408 76
House Harbour.....		112 28			112 28
Pointe à Elie.....		10,431 50			10,431 50
Magog.....			1,806 58		1,806 58
Magnasha landing pier.....		3,998 70			3,998 70
Maria Pier.....		20,640 65			20,640 65
Matane.....			2,973 34		2,973 34
Mistook (Delisle) wharf.....		2,061 04			2,061 04
Montbello.....	86 25				86 25
Mount Louis wharf.....		4,999 69			4,999 69
Montmagny wharf.....			123 53		123 93
Montreal Harbour.....		200,104 96			200,104 96
New Carlisle.....			1,300 93		1,300 93
Newport breakwater.....		63 63			63 63
New Richmond breakwater.....		2,439 71			2,439 71
Nicolet River.....	11,723 81				11,723 81
Notre Dame du Portage.....		119 65			119 65
Paspébiac, landing pier.....		5,705 82			5,705 82
Percé wharf (North Cove).....		1,387 26			1,387 26
Percé South Beach.....			399 63		399 63
Petites Bergeronnes.....		611 36			611 36
Petite Cap.....			100 00		100 00
Philipsburg.....			15 19		15 19
Pierreville.....	3,116 55	3,816 91			6,933 46
Pointe aux Esquimaux.....		5,099 93			5,099 93
Pointe aux Trembles (Portneuf Co.).....		1,343 88			1,343 88
Pointe Claire.....			150 00		150 00
Point Fortune.....		1,078 93			1,078 93
Pointe St. Pierre, breakwater.....		9,800 00			9,800 00
Port Daniel.....		5,441 79			5,441 79
Quebec Harbour, improvements.....		68,347 33			68,347 33
Rigaud.....	1,394 50				1,394 50
Repentigny wharf.....		204 06			204 06
Rimouski wharf.....		27,236 75			27,236 75
River St. Lawrence ship channel.....		582,040 92			582,040 92
River aux Renards.....		1,550 95			1,550 95
River Batiscan.....		7,440 50			7,440 50
River Ottawa—					
Blanche Shoals.....	5,246 00				5,246 00
Calumet.....	3,283 10				3,283 10
Cobb Island.....	480 00				480 00
Grenville.....	1,575 57				1,575 57
		10,602 67			10,602 67
Carried forward.....	71,590 81	1,122,237 79	30,766 59	16,084 51	1,240,679 70



## SESSIONAL PAPER No. 19

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construc- tion and Improvements.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
HARBOURS AND RIVERS.— <i>Con.</i>					
Brought forward.....	71,590 81	1,122,237 79	30,766 59	16,084 51	1,240,679 70
Quebec—Continued.					
Rivière Chateaugay.....	2,140 95				2,140 95
Rivière du Lievre, dredging at mouth..	880 00				880 00
" " Lock.....			3,641 66	995 49	4,637 15
" " Loup (Fraserville).....		3,613 20			3,613 20
" " (en haut).....	2,523 00				2,523 00
Rivière Jesus.....	6,312 00				6,312 00
" " Ouelle pier.....			5,846 34		5,846 34
" " Richelieu.....	437 43		1,259 88		1,697 31
" " Saguenay.....	621 89			12 50	634 39
" " St. Francis, ice pier, Richmond.....		10,620 91			10,620 91
" " St. Louis.....		63 45		150 00	213 45
" " St. Maurice Channel, between Grandes Piles and La Tuque.....	7,751 53				7,751 53
Rivière St. Maurice, mouth.....	13,878 50				13,878 50
Rivière Verte, wharf.....		3,698 76			3,698 76
Roberval.....			653 45		653 45
Sacré-Cœur, wharf.....		951 39			951 39
Sabrevois wharf.....	721 11	693 14			1,414 25
St. Alexis, Baie des Ha Ha, pier.....		4,067 41			4,067 41
St. Alphonse de Bagotville.....			2,465 77		2,465 77
St. André de Kamouraska.....			3,120 42		3,120 42
St. Anne des Monts.....			199 45		199 45
St. Anne de la Pocatière.....		4,280 70			4,280 70
St. Anne de la Pêrade.....			3,000 00		3,000 00
St. Anne de Sorel.....			5,353 54		5,353 54
St. Anne du Saguenay, wharf.....		1,101 80			1,101 80
St. Andrews.....	2,478 97				2,478 97
St. Denis.....	253 67				253 67
St. Famille, I.O.....		4,029 63			4,029 63
St. Felicien.....			302 94		302 94
St. Fidèle wharf.....		3,704 85			3,704 85
St. Francis River.....	134 33				134 33
St. Francois, breakwater, south shore, I.O.....		8,305 96			8,305 96
St. Fulgence.....		998 37			998 37
St. Gédéon Islands wharf.....		2,172 04			2,172 04
St. Geneviève, piers and spans.....			2,492 94		2,492 94
St. Godefroi de Nouvelle.....		2,557 27			2,557 27
St. Irénée, wharf.....		7,613 06			7,613 06
St. Jean, I.O.....			1,266 53		1,266 53
St. Jean des Chaillons wharf.....	1,004 18	44 83			1,049 01
St. Jean Port Joli.....			1,116 41		1,116 41
St. Jerome (Lake St. John) wharf.....		2,091 92			2,091 92
St. Johns.....	1,740 36				1,740 36
St. Laurent, I.O.....			122 21		122 21
St. Marc, wharf.....		501 93			501 93
St. Mathias wharf.....			1 38		1 38
St. Michel de Bellechasse.....	861 21		4,581 26		5,442 47
St. Nicholas.....			142 14		142 14
St. Siméon.....		2,992 20			2,992 20
St. Roch des Aulnaies.....			316 57		316 57
St. Valentin pier.....			1,158 15		1,158 15
St. Zotique.....			509 01		509 01
Seven Island wharf.....		25,009 06			25,009 06
Shegawake.....		2,818 02			2,818 02
Sorel, deep water wharf.....		44,224 75			44,224 75
Sorel ice piers.....		2,280 59			2,280 59
Tadousac, wharf.....			471 73		471 73
Temiscouata Lake (Notre Dame du Lac)			1,199 50		1,199 50
Three Rivers harbour.....		49,179 03			49,179 03
Carried forward.....	113,329 94	1,309,852 06	69,987 87	17,242 50	1,510,412 37

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
	£	cts.	£	cts.	£
HARBOURS AND RIVERS— <i>Con.</i>	£	cts.	£	cts.	£
Brought forward .....	113,329	94	1,309,852	06	69,987 87
Quebec— <i>Con.</i>					
Trois Laes or Flints Landing.....		731	88		731 88
Trois Pistoles breakwater .....		5,045	44		5,045 44
Valleyfield.....	4,032	00			4,032 00
Vercheres.....		5,228	00		5,228 00
Ville-Marie (Lake Temiscamingue).....		6,633	55		6,633 55
Yamaska lock and dam.....			3,698	21	1,244 52
Yamaska River.....	6,399	42			4,942 73
Generally.....	5,464	24		7,896	71
Totals, Quebec.....	129,225	60	1,327,490	93	73,686 08
Ontario.					
Amherstburg—dredging.....	10	92			10 92
Barrie.....		3,225	13		3,225 13
Barrys Bay (Madawaska River).....		14	14		14 14
Bayfield.....	2,065	33	6,668	58	402 79
Beaverton.....			50	56	50 56
Blind River wharf.....		7,418	42		7,418 42
Bowmanville.....			1,000	00	1,000 00
Bracebridge wharf.....		2	90		2 90
Brookville.....	3,480	00			3,480 00
Bronte.....		6,139	28		6,139 28
Bruce Mines.....			85	00	85 00
Burk's Falls.....		1,780	75		1,780 75
Burlington Channel.....			55,282	69	3,017 44
Christian Island.....			400	00	400 00
Cockburn Island.....			399	74	399 74
Cobourg.....			4,999	99	4,999 99
Colborne.....			3,024	97	3,024 97
Collingwood.....	65,411	65			65,411 65
Cornwall.....			48	00	48 00
Cumberland.....		118	31		118 31
Depot Harbour.....	10,974	70	95,159	41	106,134 11
Gananoque.....	7,494	25			7,494 25
Georgian Bay, Pte au Baril route.....		1,352	57		1,352 57
Goderich.....	1,317	74	17,499	99	18,817 73
Gore's Landing wharf.....		2,932	05		2,932 05
Grand Bend, breakwater.....		298	64		298 64
Grand River, Dunnville.....	10,631	40			10,631 40
Haileybury, Lake Temiscamingue.....		8,842	18		8,842 18
Hamilton.....	1,017	22			1,017 22
Hawkesbury.....	4,004	00	184	86	4,188 86
Hiawatha.....			1,038	50	1,038 50
Hilton, St. Joseph Island.....			39	90	39 90
Honora.....		182	65		182 65
Kincardine.....	1,946	00	1,142	15	3,088 15
Kingston, harbour.....	4,233	30			4,233 30
"     "     graving dock.....		46,096	12	5,806	48
Kingsville.....			998	96	998 96
Lakes Simcoe and Couchiching.....	7,834	00	1,976	45	9,810 45
Lancaster.....			98	83	98 83
Leamington.....		3,733	65		3,733 65
Little Bear Creek.....	1,810	00			1,810 00
Little Current.....		200	75		200 75
L'Original wharf.....		974	52		974 52
Meaford.....		315	20	1,989	33
Midland.....	21,242	65	4,769	51	2,394 53
McCrackens landing.....			790	72	26,012 16
McGregor's Creek.....		4,536	00		790 72
Monetville, Lake Nipissing.....			578	17	4,536 00
Morpeth.....			199	81	578 17
Carried forward.....	143,473	16	214,237	20	72,754 97
				8,823	92
					439,289 25

## SESSIONAL PAPER No. 19

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS— <i>Con.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	143,473 16	214,237 20	72,754 97	8,823 92	439,289 25
<i>Ontario—Con.</i>					
Mount Julien.....			239 77		239 77
Newcastle.....			7,999 60		7,999 60
New Liskeard, Lake Temiscamingue.....	4,685 80				4,685 80
North Bay.....			10 66		10 66
Oakville.....		6,634 67	6,000 00		6,000 00
Orillia.....			80 52		80 52
Oshawa.....			104 77		104 77
Ottawa, dock at foot of locks.....					15,984 85
Owen Sound.....	15,984 85				263 62
Parry Sound.....		263 62			1,918 00
Pelee Island wharf.....		1,518 00	400 00		341 84
Pembroke wharf.....		341 84			7,696 90
Penetanguishene.....	7,696 90				500 00
Pickering.....			500 00		21,583 10
Point Edward (Sarnia).....	21,583 10				94,777 04
Port Arthur.....	94,777 04		14,002 64		108,779 68
Port Burwell.....	4,276 88	26,966 27			31,243 15
Port Colborne.....		143,026 91			143,026 91
Port Elgin.....	1,100 00		2,830 17		3,930 17
Port Hope.....	1,534 38		5,000 00		6,534 38
Port Stanley.....			288 38		288 38
Prescott.....	4,055 50				4,055 50
River St. Lawrence (dredging at Wolf Island).....	8,571 25				8,571 25
Rivière aux Puces.....			1,584 70		1,584 70
River Kaministiquia.....	64,921 97				64,921 97
River Otonabee.....	5,403 34				5,403 34
River Ottawa, Narrows above Pembroke.....	7,000 00				7,000 00
River Sydenham.....	3,677 57				3,677 57
River Thames.....	20 00				20 00
Robbins Landing.....			143 44		143 44
Rondeau Harbour.....	6,498 29		11,646 22		18,144 51
Rosedale wharf.....		985 64			985 64
Sarnia.....	5,651 46				5,651 46
Sault Ste. Marie.....		13,669 42			13,669 42
St. Joseph, Lake Huron.....		4,604 11			4,604 11
Sturgeon Falls.....		4,123 18			4,123 18
Thessalon.....		417 27			417 27
Thornbury.....		1,499 90			1,499 90
Toronto Harbour, eastern entrance.....	2,106 00	42,574 73			44,680 73
Trenton.....	1,860 00				1,860 00
Victoria Harbour.....	6,964 10				6,964 10
Wendover.....		1,097 48			1,097 48
Warton.....		14 08			14 08
Generally.....	9,667 02			8,688 95	18,355 97
Totals, Ontario.....	421,508 55	461,974 32	123,585 84	17,512 87	1,024,581 58
<i>Manitoba.</i>					
Gimli wharf.....			1,111 83		1,111 83
Gull Harbour wharf.....		1,306 72			1,306 72
Hnausa wharf.....		1,480 20			1,480 20
Icelandic River wharf.....		844 04			844 04
Lake Dauphin, lowering.....	2,224 26				2,224 26
Lake Frances, outlet.....	3,124 68	2,867 79			5,992 47
Lake Manitoba (outlets).....	2,243 59				2,243 59
Red River—Mouth.....	7,345 15				7,345 15
Selkirk.....	2,847 89	2,953 23			5,801 12
St. Andrew's Rapids (Red River).....		17,380 20			17,380 20
White Mud River.....	3,469 70				3,469 70
Generally.....	600 12			2,405 04	3,065 16
Totals, Manitoba.....	21,855 39	26,832 18	1,111 83	2,405 04	52,204 44

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>HARBOURS AND RIVERS—Con.</b>					
<i>British Columbia.</i>					
Anderson Lake.....		999 14			999 14
Atlinto River.....			50 00		50 00
Columbia River, above Revelstoke.....		5,921 27			5,922 27
" " Golden.....		8,492 69			8,492 69
" " below Golden.....		4,924 87			4,924 87
" " between Upper and Lower Arrow Lakes.....	11,783 58				11,783 58
Columbia River (bal. dredge machinery)		3,000 00			3,000 00
Duncan River.....	1,993 15				1,993 15
Esquimalt, graving dock.....				12,854 55	12,854 55
Fraser River.....	31,735 25		30,579 67		62,314 92
Hardy Bay, wharf.....		1,564 20			1,564 20
Kennedy Lake.....		1,499 95			1,499 95
Northern Thomson River.....		4,746 10			4,746 10
Quatsino City, wharf.....		4,991 70			4,991 70
Salmon River.....		2,630 21			2,630 21
Sidney Harbour.....		7,739 36			7,739 36
Skeena River.....		4,949 71			4,949 71
Spallumchein River.....		1,490 16			1,490 16
Victoria Harbour.....	31,659 54		34 25		31,693 78
William's Head, quarantine sta. wharf.		10,973 05			10,973 05
Generally.....				1,403 21	1,403 21
Totals, British Columbia.....	77,171 52	63,922 41	30,663 92	14,257 76	186,015 61
<i>Yukon Territory.</i>					
Lewis and Yukon Rivers.....		9,569 22			9,569 22
Totals Yukon.....		9,569 22			9,569 22
<i>Harbour and Rivers Generally.</i>					
General expenses of staff, &c.....	4,788 77			8,547 73	13,336 50
<b>DREDGES AND DREDGING PLANT.</b>					
Maritime Provinces.....		126,001 03	(a)		126,001 03
Ontario and Quebec.....		204,390 06	30,796 53		235,186 59
Manitoba.....			6,724 12		6,724 12
British Columbia.....		1,270 75	4,999 45		6,270 20
Totals, Dredges and Dredging Plant.....		331,661 84	42,520 10		374,181 94
<b>SLIDES AND BOOMS.</b>					
Richelieu River—					
Belœil booms.....				549 55	549 55
St. John's boom.....			35 50		35 50
Ottawa District—					
Ottawa River.....			5,409 78	24,399 49	29,809 27
Black River.....			269 86	24 40	294 26
Cheneaux booms allowance to Improvement Co.....				1,438 31	1,438 31
Coulonge River.....			1,076 17		1,076 17
Dumoulin River.....			978 94		978 94
Gatineau River.....			893 45	1,052 57	1,946 02
Madawaska River.....			407 01	137 42	544 43
Petewawa River.....			6,016 65	65 43	6,082 08
St. Maurice District.....		45,934 53	588 52	30,142 19	76,665 24
Trent and Newcastle District.....			1,862 53	2,060 29	3,922 82
Collection of Slide and Booms dues.....				4,206 78	4,206 78
Totals, Slides and Booms.....		45,934 53	17,538 41	64,076 43	127,549 37

(a) Cost of repairs (\$13,996 32) apportioned with dredging, see various harbours in Maritime Provinces.

## SESSIONAL PAPER No. 19

## PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>ROADS AND BRIDGES.</b>				
<i>Quebec and Ontario.</i>				
Des Joachims Bridge, Ottawa River.....	81 00			81 00
Moisie Post Road, North Shore St. Lawrence.....	698 51			698 51
Ottawa, Maria St., (Laurier) Bridge.....	2,349 50			2,349 50
Ottawa City bridges and streets maintained by Govt—				
Cartier Square—permanent sidewalks.....	741 16			741 16
Chaudière bridges and approaches.....		2,053 53		2,053 53
St. Patrick St.—printing bureau.....		60 48		60 48
Sappers and Dufferin bridges and Wellington st.	1,350 00	4,783 43		6,133 43
Lighting all the above.....			2,949 50	2,949 50
Portage du Fort Bridge, Ottawa River.....	10,750 72			10,750 72
York Bridge, Grand River.....			198 34	198 34
<i>North-west Territories.</i>				
Battleford Bridge, Battle River.....	1,413 23			1,413 23
Edmonton Bridge, Saskatchewan River.....		1,509 65		1,509 65
Calgary Bridge, Bow River.....		750 66		750 66
Lethbridge Belly River.....	43,918 52			43,918 52
" Ferry (temporary).....			328 50	328 50
Macleod Bridge, Old Man's River.....	29,000 00			29,000 00
Generally N. W. T.....			822 56	822 56
Totals, Roads and Bridges.....	90,302 64	9,137 75	4,298 90	103,739 29
<b>TELEGRAPH LINES.</b>				
<i>Newfoundland.</i>				
Cape Ray line (subsidy).....			250 00	250 00
<i>Nova Scotia.</i>				
Big Bras d'Or to Upper Kempt Head, Boularderie				
Island.....	1,486 19			1,486 19
Cheticamp—Meat Cove line.....			6,972 23	6,972 23
St. Peters to Louisburg, Scatarie and North Sydney.	14,042 46			14,042 46
" Canso.....	957 89			957 86
<i>Prince Edward Island.</i>				
P. E. Island and mainland (subsidy).....			1,946 66	1,946 66
<i>New Brunswick.</i>				
Deer Island to Eastport, Me.....	428 28			428 28
Bay of Fundy line.....			1,676 15	1,676 15
Escuminac line.....			411 92	411 92
<i>Quebec.</i>				
Anticosti-Gaspé lines.....		2,388 41	5,541 68	7,930 09
Belle Isle—Chateau Bay (Marconi system).....	3,312 21		188 71	3,500 92
Isle aux Coudres line.....			150 00	150 00
Island of Orleans and Grosse Isle.....	937 89		2,157 59	3,095 48
North Shore, east of Bersimis.....	3,150 70	3,619 87	10,571 26	17,341 83
" west ".....	609 54		5,680 08	6,289 62
Magdalen Islands lines.....	3,959 44		3,111 48	7,070 92
Saguenay River lines, east side.....	4,866 82			4,866 82
" " west side.....	7,940 79			7,940 79
Generally, Gulf and Mar. Provinces.....			14,125 68	14,125 68
" expenses ss. 'Tyrian'.....			23,348 63	23,348 63
<i>Ontario.</i>				
Pelee Island line.....		2,119 25	182 27	2,301 52
Carried forward.....	41,692 21	8,127 53	76,314 34	126,134 08

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
TELEGRAPH LINES.	§ cts.	§ cts.	§ cts.	§ cts.
Brought forward.....	41,692 21	8,127 53	76,314 34	126,134 08
<i>North-west Territories</i>				
Edmonton to Athabaska Landing.....	6,668 44			6,668 44
" Edmonton Indian agency.....	151 11			151 11
Lloydminster loop line.....	4,034 25			4,034 25
Victoria, Andrew loop line.....	527 32			527 32
Wood Mountain to Willow Bunch.....	3,960 90			3,960 90
Generally N. W. T.....			19,938 62	19,938 62
<i>British Columbia and Yukon District.</i>				
Alberni-Cape Beale.....			483 00	483 00
Alberni-Clayoquot.....			3,888 42	3,888 42
Ashcroft-Dawson.....	1,039 37		199,226 14	200,265 51
Golden-Windermere.....			3,622 75	3,622 75
Kamloops-Nicola.....		752 62	611 70	1,364 32
Nanaimo-Comox.....			3,725 23	3,725 23
Vancouver-Saltspring.....	1,006 30		264 62	1,270 92
Victoria-Cape Beale.....			5,604 53	5,604 53
Generally, B.C.....			749 07	749 07
<i>Telegraph service, generally</i> .....			3,305 04	3,305 04
Totals, Telegraphs.....	59,079 90	8,880 15	317,733 46	385,693 51
MISCELLANEOUS.				
Arbitrations and awards.....			1,480 12	1,480 12
Cement testing laboratory.....			1,428 71	1,428 71
Surveys and inspections.....			50,651 12	50,651 12
Surveys of headwaters of Ottawa River and tributaries.....			6,760 60	6,760 60
Temporary employees—				
Secretary and accountant's staff.....			42,435 36	42,435 36
Chief architect's staff.....			30,501 39	30,501 39
Chief engineer's staff.....			72,834 16	72,834 16
Supt. tel. service staff.....			4,225 00	4,225 00
Departmental photographer.....			800 00	800 00
Technical and other books of reference.....			577 94	577 94
Transportation commission.....			7,389 11	7,389 11
Gratuity to daughters of late Thos. Ryan.....			200 00	200 00
" " father of late Jos. Charette.....			166 66	166 66
" " widow " Jas. Russell.....			66 66	66 66
" " " " A. Nadeau.....			50 00	50 00
" " " " J. Harrington.....			100 00	100 00
" " Dist. Supt. Jas. Wilson, on retiring.....			300 00	300 00
Public Works agency B.C.....			920 89	920 89
Totals, Miscellaneous.....			220,887 72	220,887 72

## SESSIONAL PAPER No. 19

PART II.—STATEMENT A.—EXPENDITURE—*Concluded.*

Name of Work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main tenance.	Totals.
RECAPITULATION.	s cts.	s cts.	s cts.	s cts.	s cts.
Totals Public Buildings—					
Nova Scotia .....		78,325 52	11,316 61	30,198 20	119,840 33
Prince Edward Island.....		12,040 00	398 26	6,485 83	18,924 09
New Brunswick.....		36,033 69	7,638 70	25,834 29	69,506 68
Maritime Provinces generally.....				379 61	379 61
Quebec.....		131,201 47	55,542 61	89,471 62	276,215 70
Ontario.....		489,762 74	251,471 10	293,439 26	1,014,673 10
Manitoba.....		40,926 39	10,770 75	23,587 84	75,284 98
North-west Territories.....		68,316 35	6,359 40	22,482 16	97,157 91
British Columbia.....		112,285 18	5,670 13	25,642 73	143,598 04
Yukon.....				53,675 28	53,675 28
Public Buildings generally.....				21,026 25	21,026 25
Totals, Harbours and Rivers—					
Nova Scotia.....	34,193 87	183,847 88	71,103 46	14,151 26	303,296 47
Prince Edward Island.....	13,784 67	30,887 99	13,684 74	2,516 24	60,873 64
New Brunswick.....	56,341 69	88,908 10	33,604 87	4,401 26	183,255 92
Quebec.....	129,225 60	1,327,490 93	73,686 08	26,383 73	1,556,786 34
Ontario.....	421,508 55	461,974 32	123,585 84	17,512 87	1,024,581 58
Manitoba.....	21,855 39	26,832 18	1,111 83	2,405 04	52,704 44
British Columbia.....	77,171 52	63,922 41	30,663 92	14,257 76	186,015 61
Yukon.....		9,569 22			9,569 22
Harbours and Rivers generally.....	4,788 77			8,547 73	13,336 50
Totals, dredges and dredging plant.....		331,661 84	42,520 10		374,181 94
" slides and booms.....		45,934 53	17,538 41	64,076 43	127,549 37
" roads and bridges.....		90,302 64	9,157 75	4,298 90	103,759 29
" telegraph lines.....		59,079 90	8,880 15	317,733 46	385,693 51
" Miscellaneous.....				220,887 72	220,887 72
Grand totals of expenditure.....	758,870 06	3,689,303 28	754,704 71	1,289,395 47	6,492,273 52

4-5 EDWARD VII., A. 1905

## PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &amp;c.; (the total for each province being carried into Statement 'A.')

Name of Building.	Rents.	Salaries of Engineers &c.	Heating.	Lighting.	Water.	Total.
<i>Nova Scotia.</i>	<i>8 cts.</i>	<i>8 cts.</i>	<i>8 cts.</i>	<i>8 cts.</i>	<i>8 cts.</i>	<i>8 cts.</i>
Amherst post office &c.		415 00	204 76	210 33		830 09
Annapolis "		400 00	203 35	110 25	40 00	753 60
Antigonish "		401 82	121 43	92 96	10 00	626 21
Arichat "		119 14	275 60	5 90		400 64
Baddeck "		258 60	133 50	57 30		449 40
Dartmouth "		251 80	161 70	93 75	22 40	529 65
Digby "		409 57	192 50	323 09	60 00	985 16
Guysboro' "		50 62	8 58	129 02		188 22
Halifax, Asst. Receiver General's office.	1,217 40		51 40	83 80		1,352 60
" custom house (new)				15 00		15 00
" dominion building.	2,531 91	1,784 51	3,388 52	422 99		8,127 93
" drill shed		1,000 00				1,000 00
" engineer's office	374 00					374 00
" examining warehouse.	500 00	453 19	211 14	63 30		1,227 63
" immigrant shed		633 25	668 19	707 60		2,009 04
Kentville post office, &c.		401 15	4 25	226 25	37 50	669 15
Liverpool "		404 75	215 00	171 10	18 00	808 85
Lunenburg "		324 15	213 50	220 40	59 00	817 05
New Glasgow "		305 54	137 43	262 72	100 00	805 69
North Sydney "		403 60	186 75	459 51	29 50	1,079 36
Pictou custom house.		42 25	162 62	8 50	25 00	238 37
" post office.		544 08	163 80	255 40	25 00	988 28
Springhill post office, &c.		467 02	239 80	395 48	45 00	1,147 30
Sydney "		419 03	135 45	779 68	35 00	1,369 16
Truro "		395 12	134 85	333 77	30 00	893 74
Windsor "		419 27	324 42	209 50	75 00	1,028 19
Yarmouth "		424 29	340 00	647 60	72 00	1,483 89
Totals, Nova Scotia, carried to statement A, page 3.	2,091 40	11,475 15	6,274 53	9,250 73	1,106 39	30,198 20
<i>Prince Edward Island.</i>						
Charlottetown Dominion building.		2,242 07	590 19	1,903 59	231 50	4,967 35
" engineer's office	240 00					240 00
Montague post office.		167 48	96 78	40 30		304 56
Summerside "		422 55	380 13	162 24		973 92
Totals, Prince Edward Island car- ried to statement A, page 3.	240 00	2,832 10	1,076 10	2,106 13	231 50	6,485 83
<i>New Brunswick.</i>						
Bathurst post office, &c.		470 52	484 69	80 92		1,036 13
Carleton, St. John, post office.	85 85	100 00	46 00	76 75	8 50	317 10
Chatham post office, &c.		413 24	375 57	199 39	22 50	1,010 61
Dalhousie "		402 80	283 87	21 60		708 27
Fredericton "		430 75	354 38	629 47	25 50	1,440 10
Marysville "		58 35	126 99	9 96		195 30
Moncton "		425 10	270 31	361 40	134 00	1,190 81
Newcastle "		420 76	285 28	168 20		874 24
Richibucto "		50 00				50 00
St. John custom house.	22 00	1,977 85	1,814 59	535 75	518 62	4,868 81
" immigration bldg.		1,200 00	1,331 73	903 36	61 61	3,496 70
" post office.		1,481 35	884 84	2,708 78	709 56	5,870 38
" savings bank.		5 85	344 79	113 71	19 38	483 73
Tracadie Lazaretto		203 75	1,296 61			1,499 36
St. Stephen's post office, &c.		400 00	188 05	368 10	48 00	1,004 15
Sussex "		245 81	599 45	85 20		930 46
Woodstock "		453 20	294 54	161 25	34 00	942 99
Totals, New Brunswick, carried to statement A, page 3.	107 85	8,739 33	8,981 69	6,423 75	1,581 67	25,834 29



## SESSIONAL PAPER No. 19

## PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &amp;c.—Continued.

Name of Building.	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
<i>Quebec.</i>	<i>\$ cts.</i>	<i>\$ cts.</i>	<i>\$ cts.</i>	<i>\$ cts.</i>	<i>\$ cts.</i>	<i>\$ cts.</i>
Aylmer post office.....		72 03	143 75	243 20	33 00	491 98
Bertherville post office.....		8 45	154 77	37 20	33 00	233 42
Buckingham " &c.....		124 32	286 57	132 45	18 60	561 94
Coaticook " &c.....		406 75	278 73	265 17	40 00	990 65
Drummondville " &c.....		321 54	177 00	96 96	25 82	621 32
Dundee custom house.....			61 25			61 25
Granby post office &c.....		315 15	197 75	103 69	225 00	841 59
Fraserville " &c.....		312 33	278 75	111 47	65 00	767 55
Hochelaga ".....		205 84	191 28	143 07	60 14	600 33
Hull " &c.....		150 00	76 51	588 35	261 52	1,076 38
Joliette " &c.....		414 18	263 66	102 60	108 00	888 44
Lachine ".....		118 30	258 00	90 00	29 52	495 82
Laprairie ".....		58 78	108 08	40 85	40 00	247 71
L'Assomption post office.....			212 50			212 50
Levis immigrant building.....			25 00			25 00
Montmagny post office.....		3 96	22 00	46 00	27 00	98 96
Montreal civil service exam. office.....	200 00					200 00
" custom house.....		2,337 39	957 92	742 82	319 13	4,357 26
" Dominion public buildings.....		1,700 04				1,700 04
" drill hall.....		732 00				732 00
" examining warehouse.....		3,223 94	2,737 41	1,105 68	513 11	7,580 14
" immigration office.....	500 00					500 00
" inland revenue office.....		623 67	336 84	179 92	99 91	1,240 34
" post office.....	168 16	14,227 96	1,255 64	8,593 48	896 82	25,142 06
" Windsor sta. P.O.D.....	1,300 00					1,300 00
" sta. B.....	1,650 00					1,650 00
" P.O. Brch. Metcalf street.....	250 00					250 00
Peribonka immigrant shed.....		300 00	91 50			391 50
Quebec citadel buildings.....	32 50	470 96	1,415 89	64 47		1,983 82
" clerk of works office.....	60 00	75 00				135 00
" clerk residence.....	25 00					25 00
" culler's office.....		540 00	566 36	30		1,106 66
" custom house.....		622 67	1,146 98	522 89	800 00	3,092 54
" Dominion public buildings P.O.....		10 45				10 45
" engineer's off. exam. warehouse.....	381 96	1,571 38	1,948 92	101 69	450 00	4,453 95
" immigration office.....	22 50	36 74	997 97	601 34		1,568 55
" observatory.....					50 00	50 00
" post office building.....		1,791 69	1,020 64	801 16	750 00	4,273 49
" Queen's wharf building, marine.....			1,477 15		750 00	2,227 15
" inland revenue.....			56			56
Richmond post office, &c.....		379 97	322 89	225 21	10 42	938 49
Rimouski public building.....		160 23	328 29	83 55		572 07
Roberval immigration shed.....		335 48	313 00	60 75		709 23
Sherbrooke post office &c.....		503 38	490 18	621 93	50 00	1,665 49
Sorel " &c.....		506 37	772 16	502 25	250 00	2,030 78
St. Eustache post office.....	60 00					60 00
St. Roch ".....			47 24	38 15		85 39
St. Henri ".....			223 39	108 72	29 28	361 39
St. Hyacinthe " &c.....		548 60	468 02	884 17	150 00	2,050 79
St. Jérôme " &c.....		426 70	258 75	182 40	50 00	917 85
St. John's " &c.....		358 51	103 56	315 05	60 00	837 12
Three Rivers custom house.....		300 00	434 74	112 26	48 60	895 00
" post office.....		453 60	333 20	174 50	62 00	1,023 30
Valleyfield post office.....	352 50		67 50	42 60		462 60
Victoriaville post office.....	1 00	134 65	281 52	206 92	50 04	674 13
West Farnham post office.....		27 32	100 60	118 30	10 00	256 22
Totals, Quebec (carried to statement A, page 5.....)	5,003 62	34,820 33	21,144 42	18,391 52	6,365 31	85,725 20
<i>Ontario.</i>						
Almonte post office, &c.....		407 90	199 50	84 05		691 45
Amherstburg post office, &c.....		418 50	301 12	129 05	35 00	883 67
Carried forward.....		826 40	500 62	213 10	35 00	1,575 12

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT B.—Showing the cost of the following services for each Public Buildings, &c.—*Continued.*

Name of Building.	Rents.	Salaries of Engineers &c.	Heating.	Lighting.	Water.	Total.
	8 cts.	8 cts.	8 cts.	8 cts.	8 cts.	8 cts.
Brought forward..		826 40	500 62	213 10	35 00	1,575 12
<i>Ontario—Con.</i>						
Amprior public building		415 90	283 06	194 71	33 19	926 86
Barrie "		430 56	526 30	174 34	50 00	1,181 20
Belleville "		670 87	770 89	805 51	85 50	2,332 77
Berlin "		439 53	239 29	403 10	13 27	1,095 19
Brampton "		411 25	207 82	251 47	32 00	902 54
Brantford "		617 86	203 79	341 13	38 00	1,200 78
" examining warehouse			197 73			197 73
Brockville public building		416 22	425 37	767 05	170 00	1,778 64
Carleton Place "		310 67	203 75	90 94		605 36
Cayuga "		65 55	108 12	44 13		217 80
Chatham "		551 98	210 33	317 84	42 50	1,122 65
Clinton "		48 15	125 30	70 85		244 30
Cobourg post office, &c.		423 83	223 30	461 95	23 94	1,133 02
Cornwall public building		481 24	320 00	686 05	75 00	1,562 29
Deseronto "		472 65	520 80	243 96	39 00	1,276 41
Dundas post office	375 00	50 00	69 05	55 00		549 05
Fort William public building			221 25			221 25
Galt "		432 89	236 03	297 39	32 50	998 81
Gananoque custom house.			148 37	94 00		242 37
" post office.		7 59	97 57	141 00	5 00	251 16
Goderich public building.		441 05	339 77	209 84	60 00	1,110 66
Guelph "		405 15	339 91	284 81	28 08	1,057 95
" post office.	145 00					145 00
Hamilton custom house.		615 50			18 60	634 10
" exam. warehouse.				78 55	33 40	111 95
" drill shed.		360 00				360 00
" immigration building.					8 55	8 55
" post office		1,319 60	2,005 10	1,801 57	750 00	5,876 27
Ingersoll public building.		428 40	427 63	292 04	26 21	1,174 28
Kingston custom house.		221 80	193 95	120 48	61 20	597 43
" exam. warehouse.					12 95	12 95
" inland revenue office.				72 00	22 59	94 59
" military college.		2,760 00				2,760 00
" post office.		164 75	274 00	1,083 33	48 06	1,570 14
" drill hall.		200 00				200 00
Lindsay post office.		408 50	237 80	83 95	22 50	752 75
London custom house.		1,204 03	935 51	756 69	105 00	3,001 23
" post office.		637 98	980 34	1,354 34	80 00	3,052 66
Napanee post office.		460 60	277 00	96 40	69 44	903 44
Niagara Falls public building.		427 35	195 37	406 25	45 00	1,073 97
Orangeville post office.		400 00	194 75		20 00	614 75
Orillia "		314 54	181 50	87 10	32 50	615 64
Ottawa bacteriological laboratory.			161 00	16 25		177 25
" experimental farm.			1,284 88	453 74		1,738 62
" geological museum.		648 00	689 73	323 94		1,661 67
" Major's Hill greenhouse.		288 00	392 00			680 00
" national art gallery.			91 00	38 00		129 00
" observatory (Cliff st.).				16 00		16 00
" parliamentary and departmen- tal buildings.		30,682 73	36,342 69	15,872 70		82,898 12
" post office.		1,440 00	1,234 81	752 32		3,427 13
" printing bureau.		10,307 18	11,318 15	825 65		22,450 98
" supreme court.		948 00	727 18	333 99		2,009 17
Ottawa, rented buildings—						
Bank of Ottawa chambers (old bal- ance)	2,000 00					2,000 00
Dairy commissioner's office.			245 00			245 00
Census building.	6,500 00	864 00	805 00	226 50		8,395 50
Chief analyst's office.			259 03	2 50		261 53
Chief astronomer's office.				42 00		42 00
Carried forward.	9,020 00	63,020 30	66,031 84	31,284 46	2,118 98	171,475 58

## SESSIONAL PAPER No. 19

PART II.—STATEMENT B—Showing the cost of the following services for each Public Building, &c.—*Continued.*

Name of Building.	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.	9,020 00	63,020 30	66,031 84	31,284 46	2,118 98	171,475 58
<i>Ontario—Concluded.</i>						
<i>Ottawa, rented buildings—Con.</i>						
Customs statistical offices.	1,500 00	288 00	385 00	267 00		2,380 00
Custom house (Wood's building, Queen st.)	1,200 00	576 00	595 00			2,371 00
Exhibition commissioner's offices.	500 00		112 00	37 00		649 00
French translator's offices.	465 00		122 75	497 51		1,085 26
Gas inspector's office.				10 56		10 56
Geological museum annex.	600 00			19 56		619 56
Imperial building (agriculture and immigration).	4,200 00			226 50		4,426 50
Labour department.	1,200 00			113 00		1,313 00
Langevin block (Howell estate).	5 00					5 00
Militia department, (Wood's build- ing, Slater st.)	5,520 00	600 00	987 24	445 00		7,552 24
Marine stores.			152 00			152 00
N. W. M. Police stores.	855 00		28 00	84 00		967 00
Sparks' chambers (various dept's.).	1,347 00			42 00		1,389 00
Surveyor General's offices.	2,250 00	288 00	533 67	252 01		3,323 68
Public works dept., workshops, &c.	1,470 00	288 00	819 35	654 60		3,231 95
Paris public building.		410 75	223 00	146 04	63 60	843 39
Pembroke post office.		431 85	269 57	249 60	28 00	919 02
Peterboro' custom house.		305 35	203 96	75 30	50 00	634 61
" post office.		315 45	273 65	231 50	75 00	895 60
Petrolia "		416 10	290 63	35 77	34 76	777 26
Pictou "		444 65	234 00	120 07	29 50	828 22
Port Arthur "		328 25	249 80	164 70		742 75
Port Colborne "		277 20		138 10	7 50	422 80
Port Hope "		418 15	238 00	449 30	8 83	1,114 28
Prescott custom house.		1 85	441 50			443 35
" post office.		411 80	237 75	193 44	120 00	962 99
Rat Portage public building.		409 50	606 00	276 09	70 76	1,362 35
Samia "		347 01	422 36	29 38		798 75
Smith's Falls post office.		308 10	177 25	132 76	66 57	684 68
Stratford public building.		678 95	238 90	291 04	63 50	1,272 39
Strathroy "		431 10	348 67	216 12	3 60	999 49
St. Catharines "		429 15	255 40	266 60	48 65	999 81
St. Thomas "		438 93	356 50	568 45	52 28	1,416 16
Toronto civil service exam. office.	142 00					142 00
" custom house.		1,529 59	615 86	241 02	55 88	2,442 35
" Dominion public building.		1,290 00				1,290 00
" drill shed.		991 13				991 13
" examining warehouse.		4,698 54	1,021 86	287 82	76 17	6,084 39
" ss. inspector's office.	337 50					337 50
" inland revenue office.		663 90	363 10	175 88	32 02	1,234 90
" sta. B. post office.	750 00					750 00
" post office.		4,696 42	1,687 57	6,183 62	542 60	13,110 21
" " stables.	132 00					132 00
" asst. rec. gen.		366 00	28 00	62 72		456 72
" engineers office.	710 00			12 00		722 00
Trenton post office.		459 50	197 50	153 48	75 00	885 48
Walkerton "		406 50	294 60	201 15	31 00	933 05
Windsor public building.		819 00	515 75	824 75	96 00	2,255 50
Windsor armoury.		400 00				400 00
Woodstock "		459 32	327 75	311 86	38 20	1,137 13
Totals, Ontario, carried to State- ment A, page 7	32,263 50	88,644 15	79,825 78	45,911 76	3,788 40	250,373 59
<i>Manitoba.</i>						
Brandon experimental farm.			380 69			380 69
" post office, &c.		623 65	945 08	909 05	127 00	2,604 78
Carried forward		623 65	1,325 77	909 05	127 00	2,985 47

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—*Continued.*

Name of Building.	Rents.	Salaries of Engineers &c.	Heating.	Lighting.	Water.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....		623 65	1,325 77	909 25	127 00	2,085 47
<i>Manitoba—Concluded.</i>						
East Selkirk immigrant building.....	5 00		744 00			749 00
Dauphin immigrant building.....			97 50			97 50
Minnedosa Dominion land office.....	735 00		139 75			874 75
Portage LaPrairie post office.....		404 90	711 15	282 30		1,398 35
Winnipeg clerk of works.....	50 00					50 00
" custom house.....		345 50	929 90	167 38	58 16	1,500 94
" Dominion lands office.....			338 17	35 13	65 67	438 97
" engineer's office.....	424 50					424 50
" examining warehouse.....			533 62	89 40	28 03	651 05
" immigrant shed.....			1,512 90	709 50	792 59	3,014 99
" post office.....		2,896 22	3,017 21	3,792 69	738 25	10,444 37
" immigrant hospital.....				181 85	64 28	246 13
" weights and measures off.....	480 00					480 00
Totals, Manitoba, carried to State- ment A, page 7.....	1,694 50	4,270 27	9,349 97	6,167 30	1,873 98	23,356 02
<i>North-west Territories.</i>						
Alameda Dominion lands.....	195 00		17 59			212 59
Calgary court house, &c.....		500 90	273 65	113 40	255 00	1,142 95
" engineer's.....	140 00					140 00
" Dominion lands office.....			6 50			6 50
" immigrant building.....	1 00		256 84			257 84
" land and registry office.....		3 60	76 50			80 10
" post office.....		595 25	1,402 67	956 25	340 00	3,294 17
Carnduff court house.....		413 73	67 50	1 86		483 09
Didsbury, immigrants building.....	80 00					80 00
Edmonton, court house.....	450 00	682 90		60 02		1,192 92
" Dom. lands & registry office.....		407 50	93 30	3 50		504 30
" immigrant shed.....	450 00		304 75			754 75
" post office.....	27 00	5 80		300 55		333 35
Indian Head experimental farm.....			475 00			475 00
Grenfell, immigrant building.....	48 00					48 00
Leduc, immigrant hall.....	90 00					90 00
Lethbridge court house & custom house.....		4 70	165 50	1 75		171 95
" immigration building.....			71 50	42 49		113 99
" post office.....	18 00	523 35	10 00	161 72	36 00	749 07
Lacombe, immigration building.....	117 00		25 00			142 00
Lamerton, immigrant building.....	80 00					80 00
Macleod custom house.....			20 00			20 00
" immigrant hall.....	130 00					130 00
" court house.....	225 00	175 00	122 15			522 15
Medicine Hat, court house.....		540 00	23 25	27 77	11 07	602 09
Maple Creek, court house.....	10 00					10 00
Moose Jaw, ".....		408 95	246 95	5 20		661 10
Moosomin, ".....		603 50	488 29	16 33		1,108 12
Prince Albert, Dom. lands & reg. office.....		419 85	285 00	17 61		713 46
" immigrant shed.....	40 00		74 25			114 25
Qu'Appelle, court house.....			5 00			5 00
Red Deer Dominion lands office.....	72 00					72 00
" immigrant shed.....	180 00		34 00			214 00
Regina, court house.....		1,050 25	870 00	228 66		2,148 91
" Dominion lands & reg. office.....		563 50	674 00	280 72		1,518 22
" immigrant building.....	1 00		152 50			153 50
" post office.....		13 50	201 44	48 24		263 18
Rosthern, immigrant shed.....			146 30			146 30
" lands office.....	120 00					120 00
Carried forward.....	2,474 00	6,903 28	6,589 43	2,266 07	642 07	18,874 85

## SESSIONAL PAPER No. 19

PART II.—STATEMENT B.—Showing the cost of the following service for each Public Building, &c.—*Continued.*

Name of Building.	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
	s cts.	s cts.	s cts.	s cts.	s cts.	s cts.
Brought forward.....	2,474 00	6,903 28	6,589 43	2,266 07	642 07	18,874 85
<i>North-west Territories—Concluded.</i>						
Saskatoon, court house.....	6 00					6 00
Saskatoon, immigrant building.....		13 24	792 90			806 14
Strathcona immigrant shed.....	216 00		613 92			829 92
Teulon, immigrant building.....	77 00					77 00
Wetaskiwin, immigrant building.....	100 00					100 00
" court house.....	45 00					45 00
Wolseley, court house.....		26 35	327 75	32 54		386 64
" lands office.....		540 00				540 00
Yorkton, court house.....		41 66	9 59			51 25
Yorkton, immigrant building.....	315 00		440 86			755 86
Totals, North-west Terri.; carried to statement A, page 8.....	3,233 00	7,524 53	8,774 45	2,298 61	642 07	22,472 66
<i>British Columbia.</i>						
Agassiz experimental farm.....			78 77			78 77
Atlin, post office.....		152 25	90 00	67 50		309 75
Kamloops public building.....		610 70	586 71	95 45		1,292 86
Kaslo, drill hall.....			80 00			80 00
Nanaimo post office.....		600 00	70 00	243 00	36 00	949 00
Nelson, public building.....		657 75	290 60	623 70	45 00	1,617 05
Esquimalt, custom house.....			14 52			14 52
New Westminster, post office.....		616 65	94 96	663 64	31 02	1,406 27
Rossland public building.....		807 52	497 90	353 55	73 32	1,732 29
Vancouver drill hall.....			610 67			610 67
" examining warehouse.....	1,800 00	540 00	4 26	35 96		2,380 22
" post office.....		1,293 20	438 28	1,273 10	75 16	3,079 83
" custom house.....				540 67		540 67
Victoria examining warehouse.....			10 00			10 00
" barracks.....			49 55			49 55
" drill hall.....			41 15			41 15
" indian office.....		604 15	177 05	88 14	17 50	886 84
" military store.....			239 73			239 73
" post office.....		2,913 70	633 03	1,465 26	46 40	5,058 39
" old post office.....					95 00	95 00
" public works.....	84 00					84 00
William's Head quarantine station.....	60 00		3,129 55	40 00		3,229 55
British Columbia generally.....		37 17				37 17
Totals, British Columbia carried to Statement A page 9.....	1,944 00	8,833 09	7,136 73	5,490 06	419 40	23,823 28
Dominion buildings generally.....			1,468 34			1,468 34
Totals.....	16,905 87	119,921 04	88,031 41	75,017 52	16,008 72	315,884 56

4-5 EDWARD VII., A. 1905

PART II.—STATEMENT C.—Showing amounts loaned by Government under the authority of special Acts of Parliament and upon the recommendation of the Hon. the Minister of Public Works, during the Fiscal Year 1903-4.

To whom loaned.	Parliamentary authority.	Purpose.	Amounts.
Harbour Commissioners of Montreal.....	Acts 59 Vict., ch. 10 and 61 Vict., ch. 47... ..		8 cts.
Harbour Commissioners of Montreal.....	Act 1, Ed. VII, ch. 9...	General work of improvement to harbour.....	600,000 00
		Construction of a steel grain elevator.....	300,000 00
	Total . . . . .		\$900,000 00

DEPARTMENT OF PUBLIC WORKS,  
ACCOUNTANT'S OFFICE,  
OTTAWA, Dec. 22, 1904.

A. G. KINGSTON,  
*Accountant.*







PART III  
REPORT

ON

PUBLIC BUILDINGS THROUGHOUT THE DOMINION

FOR THE FISCAL YEAR ENDED JUNE 30, 1904.

BY THE

CHIEF ARCHITECT



PUBLIC WORKS, CANADA,  
CHIEF ARCHITECT'S OFFICE,  
OTTAWA, December, 7, 1904.

F. GÉLINAS, Esq.,  
Department of Public Works.

SIR,—I am sending you herewith, annual report of works executed under this branch during the year ended June 30, 1904.

D. EWART,  
*Chief Architect.*

PROVINCE OF NOVA SCOTIA.

HALIFAX.

APPRAISER'S OFFICES.

A new partition was erected, some glazing done and repairs made to plumbing under the supervision of C. E. W. Dodwell, resident engineer and inspector of buildings, Nova Scotia Halifax.

CUSTOM HOUSE.

This building which was described in a previous report has been carried on continuously during the fiscal year and is still in progress.

DOMINION BUILDING.

A quantity of new furniture, including cabinets for railway mail service, chart table, &c., for Marine and Fisheries office were supplied as well as the necessary electric lamps, &c. Repairs were effected to heating, plumbing, lighting, mail hoist, ceilings, roof, woodwork, painting, glazing, lock boxes, locks and furniture.

Work supervised by C. E. W. Dodwell, resident engineer and inspector of public buildings, Halifax, N.S.

IMMIGRATION BUILDING.

Some repairs, additional to those reported last year, were effected to partitions, gates, wiring, furniture, &c., under the supervision of C. E. W. Dodwell, resident engineer and inspector of public buildings, Halifax, N. S.

LAWLOR'S ISLAND.

QUARANTINE STATION.

Extensive repairs were made to the engines and boiler of the steamer 'Argus.'

The foundation walls of the hospital and of the storehouse near the steward's residence were rebuilt; the large 3rd class detention building was partitioned into

4-5 EDWARD VII., A. 1905.

thirty-two cubicles ; the other and nearby 3rd class detention building was sheathed round the foundation posts ; the back half of the storehouse was floored in cement and lined with wood ; two rooms in the hospital for saloon passengers were wood-lined and finished and repairs were made to chimney and roof.

Work done under the supervision of C. E. W. Dodwell, resident engineer and inspector of public buildings, Halifax, N.S.:

## SYDNEY.

### DOMINION BUILDING.

#### *Addition to Main Building.*

This is an addition of 30 feet in length by 40 feet in breadth on Dorchester street elevation with which it is continuous and similar in detail, number of stories and constructive material. The basement will be excavated and continuous with the original basement ; the ground floor will add 20 feet of its length to the post office, the remaining portion being divided up into a front vestibule, a brick safe, a lavatory room and a mail entrance ; on the first floor will be two rooms, two brick safes, while in the attic will be four rooms.

Plans, &c., prepared by this department.

Clerk of works, Duncan A. Gillis.

Contractors, Rhodes & Curry.

## PROVINCE OF NEW BRUNSWICK.

### FREDERICTON.

#### PUBLIC BUILDING.

A fire extinguishing apparatus consisting of hydrants and hose on all floors attached to a standpipe connected to main on street was installed. New eaves troughs were supplied and fixed to back porch ; some painting was done in caretaker's quarters and minor repairs were affected to roof, plumbing, doors, &c.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

#### MILITARY STABLES.

On July 9, 1903, a contract was entered into for the construction of this building, which is of wood, 20 feet by 44 feet, one and a half story on a pile foundation. The roof and external surface of the walls are covered with steel shingles. On the ground floor are a carriage room, a loose box, a harness room, a loose box, and three stalls and on the upper floor, a hay-loft and a grain store.

Plans, &c., prepared by this department.

Clerk of works, H. M. Clarke.

Contractor, C. J. B. Simmons.

#### SERGEANT-MAJOR'S QUARTERS.

On August 3, 1903, a contract was entered into for the construction of this building which is one and a half story of wood, 32 feet 8 inches by 16 feet 8 inches on a stone foundation, having a one story adjunct 19 feet 2 inches by 10 feet 10 inches,

## SESSIONAL PAPER No. 19

in rear, on a stone foundation. There is a cellar under the main portion ; the ground floor has two rooms as well as a hall and vestibule in the main portion and a kitchen and pantry in the adjunct; the first floor has three bedrooms, a bathroom and a passage.

Plans, &c., prepared by this department.

Clerk of works, H. M. Clarke.

Contractor, C. J. B. Simmons.

This building is completed.

## MARYSVILLE.

## POST OFFICE.

Owing to the flooding of basement from a broken sewer on adjacent property, a new 3-inch plank drain 65 feet in length was laid, the earth about the buildings down to the footings excavated ; the walls to ground level covered with a cement concrete casing 6 inches thick and the trench about building filled in. The old sewer was removed and the basement thoroughly cleaned.

Work done under the supervision of D. H. Waterbury, of this department, St. John, N.B.

## PARTRIDGE ISLAND.

## QUARANTINE STATION.

Building 'A,' the Hospital.—An addition was made at western end to serve as a furnace-room and coal store and a hot-water heating system installed. The water service was repaired and partly renovated.

Building 'B,' Detention House.—A drain was laid and the furnace, range and plumbing were repaired.

Building 'C,' Detention House.—The W.C.'s in the lavatory rooms were removed and cement latrines constructed. The iron smoke pipes of heating furnaces were removed and brick flues in basement substituted therefor. Some grading was done and the drainage improved. New roller window blinds were provided.

Steward's House.—A stove was supplied and some minor general repairs effected.

Building 'E,' Doctor's House.—The roof of wing was covered with composition ; several rooms had ceilings whitened as well as papering and painting done and some minor repairs effected.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

## RICHIBUCTO.

## PUBLIC BUILDING.

This building was described in my report of last year ; meanwhile it has been finished, fitted up and furnished and is heated by a hot-water system.

Plans, &c., prepared by this department.

Clerk of works, Cyrille Comeau.

Contractor for the construction of the building, James Reid.

Contractor for heating system, Frank Powers.

## SUSSEX.

## PUBLIC BUILDING.

The shingling of roof was removed and a galvanized iron covering substituted ; a portion of the foundation wall was rebuilt ; the brickwork and masonry was re-

4-5 EDWARD VII., A. 1905

pointed; stand-pipes, hydrants, hose, &c., were put in for all floors to afford protection from fire; a complete plumbing and drainage system with fixtures, such as w.c.'s, lavatory basins, sink, bath, boilers, &c., was installed, the walls, ceilings and woodwork were cleaned, tinted, painted and varnished, and repairs were made to floor, woodwork, back stoop and outside steps.

Work done under the supervision of D. H. Waterbury, of this department, St. John, N.B.

## ST. JOHN.

### CUSTOM HOUSE.

The retaining wall which had caved in last autumn, was restored in cement concrete. The entire front elevation and the south end of the building had the stonework pointed; some of the stone cornice corbels which had fallen were restored. A wooden partition was built to inclose the lower basement hall alcove and provide storage. The time ball apparatus was overhauled, repaired and improved throughout. A stone cap was placed on brick pier of transit in observatory; the lifting rigging of the hatch was renewed and two special chairs were supplied the observatory. The hoist of the Customs Department was overhauled and put in good working order. The five lavatory rooms were cleaned, kalsomined and tinted, and the woodwork varnished. Two offices on first floor were painted, the ceilings whitened and a cabinet varnished; two on ground floor were kalsomined, the ceilings whitened and a cabinet varnished; shelves and a shelf counter were built in express-room; sundry repairs were made to woodwork, plumbing, copper roofing and electric bells.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

### POST OFFICE.

On the letter carriers' flat the partitions were removed and the apartments formed into one room, all the walls and ceilings therein were made good, the heating coils and electric wiring were rearranged and improved and 60 feet lineal of tables supplied. The Princess street entrance door was taken off and replaced by a new one, and repairs were done to some doors and woodwork. A new urinal and tank was supplied and connected on second floor, and some repairs were done to the plumbing and electric bell services. An electric clock was set up in the lobby and connected with the regulator clock at the observatory. New rubber stamping pads were supplied. The elevator was overhauled and put in order and the elevator well bricked up. Repairs were made to copper roof covering and troughs, ironmongery of doors and windows, furniture and fittings. Two windows were fitted with luxfer prisms to improve the lighting in basement.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

### SAVINGS BANK.

A bracketed shelf was put up in public lobby for use as a writing desk; some gas tubing was supplied for vault lights, and repairs were made to floor of banking office, to the asphalt covering of area and to the plumbing. The boiler room was lime whitened, the ceilings of same rooms and halls were whitened, the walls painted and the radiators bronzed.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

## ST. JOHN.

## IMMIGRATION BUILDING.

A portion of this building was damaged by a fire which caught from the burning of a city warehouse, and the making good involved repairs and renovation of roof, cornice, windows, wall covering, doors and furniture. Alterations of the position of partitions were made in several places, and a number of new partitions, partly glazed, were erected on first floor. At the south western end of building a new porch containing entrance and stairway was built having walls, doors, windows, floors similar to those in the building. The end lavatory rooms were transformed into a furnace room to contain the boilers for heating the large shed near by. Improvements were made in floor of boiler-room to render it completely water-tight. Fire hose was supplied and repairs made to cooking range and furniture. A coal shed was built under the broad stairs of the new shed.

All done under the supervision of D. H. Waterbury, of this department, St. John, N. B.

## ST. JOHN, NORTH (PORTLAND).

## POST OFFICE BUILDING.

On February 15, 1904, the building was sold by the government to Dr. J. E. Maher.

## ST. JOHN WEST (CARLETON).

## POST OFFICE.

The brickwork was pointed, the slate roof repaired and in part renewed; the wood-work, doors, plumbing and waste pipes and glazing were repaired; the cupola was painted and the front doors varnished.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

## PROVINCE OF PRINCE EDWARD ISLAND.

## CHARLOTTETOWN.

## DOMINION BUILDING.

Re-arrangement and alteration of ground floor.

Changes are in progress for the enlargement of the postal accommodation. The floor area of the post office is being increased in width nine feet, and that of the Savings Bank decreased. The original brick division wall between the savings bank and the post office is to be removed, and be replaced by brick piers which are to carry iron beams supporting the brick division wall on first floor. The partition between the bank and post office will have glazed doors and borrowed lights. The additions to the post office fittings will comprise an entire new box screen, money and registered letter office and fittings, opening table, parcel post stand, two public desks and stamp vendor's office. The w.c.'s. in rear will be removed and placed under the landing of main staircase. A door is to be broken through outer wall of room originally occupied as ground floor w.c., for use as a mail entrance. Change in position of a number of

4-5 EDWARD VII., A. 1905

heating radiators and lavatory basins is necessary owing to the general scheme of attraction as also changes in basement walls, &c., &c.

Plans prepared by this department. Clerk of works, John Harper.

Caretaker, H. & S. Lowe.

## PROVINCE OF QUEBEC.

### ACTONVALE.

#### POST OFFICE BUILDING.

On June 28, 1904, a contract was entered into for the construction of this building fronting on Main street. It is to be two and one half stories of brick on a stone basement supported on a pile foundation and measuring 43 feet 9 inches by 30 feet 10½ inches; the partitions, roofs and floors are wood, excepting the basement floor, which is concrete. The basement is to contain heating apparatus, fuel and w.c.s.; on the ground floor is to be the post office, stairway hall and entrances, and on the upper floor are to be seven living rooms exclusive of a kitchen and a bath-room.

Plans, &c., prepared by department.

Contractor, Joseph Bourque.

### GROSSE ILE.

#### QUARANTINE STATION.

A large number of the fences were coated with coal-tar composition.

#### HEALTH DIVISION.

There are in progress and nearing completion two buildings as follows :—

Works offices.—A wooden building on a concrete foundation, 28 feet by 30 feet, two stories and basement, the deck roof covered with galvanized iron. The ceilings, walls and partitions of the rooms are to be plastered, and those of the halls and passages sheathed with wood. There is to be a one story wing also of wood, 15 feet by 12 feet. Heating is to be by hot air and there is to be water service, plumbing and drainage.

Kitchens.—These are eight divisions of a wooden one story building on cedar posts, 150 feet 9 inches long by 15 feet 9 inches broad, having galvanized iron roof covering. There are to be four brick chimneys of two flues each. A water service, sink and drainage to each kitchen. The original detached kitchens were reshungled and generally repaired. The steamer 'Challenger' was repaired and repainted.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.

### LEVIS.

#### CATTLE QUARANTINE.

The pump and vehicle buildings were repaired; the employees' building had new trimmings to doors, windows, gallery, stairs and wainscoting, as also general repairs throughout; several of the sheds had new stone piers; 4 pumps with piping were connected to wells; a stove for heating water was supplied, and a clock for the use of the night watch.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.



## SESSIONAL PAPER No. 19

## MONTREAL.

## CUSTOM HOUSE.

Glazed partitions were erected in long room and in gauger's room ; a hardwood floor was laid in gauger's room ; electric light was installed in several additional offices ; iron mats were supplied at entrances ; a new wash basin was fitted up ; some furniture was supplied and repairs made to roof, plumbing, glazing and painting.

Work done under the supervision of C. Desjardins, clerk of works Montreal, P.Q.

## EXAMINING WAREHOUSE.

On March 28, 1904, a contract was entered into for the construction of six freight elevators in place of the original freight elevators which were too small and otherwise unsuitable. Changes were made in plan necessitated by removal of the dry goods, hardware, groceries and cigar departments to third floor. Glazed partitions, hardwood floors, counters, iron screens and other fittings and furniture were provided for the various departments, on the first floor which was completely cleaned and had the brickwork repaired and whitewashed and the woodwork repainted or oiled. The second floor is about to be treated similarly. An electric lighting system was installed throughout the building. New lavatories have been fitted up with closets, lavatory basins and sinks ; the iron fence was repaired and painted and the roof and gutters repaired.

Work done under the supervision of C. Desjardins, clerk of works Montreal, P.Q.

## INLAND REVENUE BUILDING.

The interior of the building was repaired, cleaned, tinted and painted. An automatic water filter was fitted in the water supply main at its entrance to the building. A new bath and a lavatory basin were fitted up for the caretaker ; some new heating coils were added ; some new partitions, counters, shelving, &c., were erected and the floors of some of the passages laid in hardwood. Repairs were effected to water service and roof.

Work supervised by C. Desjardins, clerk of works, Montreal P.Q.

## POST OFFICE.

A system for heating water for cleaning purposes was fitted up ; some new coils were added to the heating system ; new electric lights were added to the lighting system ; hardwood and glazed partitions were erected ; one office floor was laid and in hardwood ; brass standards were placed outside the registry wickets ; the ground floor and basement rooms were cleaned, tinted and painted, some rooms on first floor cleaned, tinted, papered and decorated. New combination locks were supplied to money order vaults. Repairs were effected to money order vault, heating system, plumbing, lighting, drainage and roof. The hardwood throughout ground floor was revarnished and some carpets and furniture supplied.

Work supervised by C. Desjardins, clerk of works, Montreal P.Q.

## QUEBEC.

## HIS EXCELLENCY'S RESIDENCE, CITADEL.

Repairs were effected to plumbing, bells and lighting, some of the woodwork was repainted and the interior of the building cleaned and put in order for the annual visit of Their Excellencies.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.

4-5 EDWARD VII., A. 1905

## CUSTOM HOUSE.

Some shelving and sets of drawers were furnished, and repairs were effected to plumbing, furniture, bells, clocks, &c.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.

## EXAMINING WAREHOUSE.

The flooring on the first floor was relaid; part of the drainage system was renovated; the elevator engine was inclosed by a glazed wooden partition; a new w.c. and a tiled floor in toilet room were put in for Harbour Commissioners; a bath and a skylight were put in the caretaker's apartments, and all the rooms thereof were painted. The halls of ground floor were painted and repapered and the appraiser's rooms recarpeted.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.

## IRON FOUNDRY.

The ground was graded and levelled; the cupola was enlarged; piping put in oven; a steam-heating plant was fitted up, and a toilet room with w.c. basin and tiled floor was made.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.

## IMMIGRATION BUILDING, LOUISE EMBANKMENT.

An additional three rooms were built and a porch as well; new chimney caps were set; the roof was repaired; additions were made to plumbing services and drainage; the well was cleaned and the pipes thereto renewed; repairs were made to electric lights, pump, stove and hot water piping, and some furniture and carpets supplied to officers and matron.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.

## POST OFFICE.

Two offices and one hall on first floor were refloored in hardwood and one of these offices was replastered. Electric lighting was installed on first and second floors. The basement rooms throughout were painted and papered. Alterations and renewals were made in the original electric wiring and fixtures and repairs made to glazing, &c.

Work supervised by Ph. Béland, clerk of works, Quebec, P.Q.

## TELEGRAPH OFFICE.

Two hundred and eighty boxes were supplied.

## ST. HYACINTHE.

## INLAND REVENUE BUILDING.

On July 30, 1903, a contract for the construction of this building which is situated on the corner of Girouard and St. Dominique streets, on a plot of ground having frontages of 85 feet 8 inches and 106 feet 11 inches, respectively, adjoining and west of the post office plot. The building measures 48 feet by 48 feet, and consists of two stories besides a basement, a sub-basement and an attic story. A tower 12 feet square with two additional upper stories contains the main entrance in the middle of the Girouard street frontage. The sub-basement occupies 20 feet in depth by the full breadth of the rear of the building and consists of a furnace-room, a fuel-room and a

## SESSIONAL PAPER No. 19

stairway hall. The four succeeding flats have each a stairway hall 8 feet wide, running from front tower to rear of building ; the basement has in addition two large rooms, a w.c. room and a brick vault ; the ground floor, one room, 17 feet 6 inches by 36 feet, two, each, 17 feet 9 inches by 17 feet 6 inches, two brick vaults and entrance porch ; the first floor, 4 rooms 17 feet 9 inches by 17 feet 6 inches, a brick vault and a small room in tower and the attic 5 rooms, as well as bath-room and a w.c. room. The walls are of stone; the partitions in sub-basement, the walls of tower inside building and the vaults are of brick ; and the remaining partitions, the floors, excepting in basement, where it is concrete, as well as the roof are of wood ; the roof and dormers are covered with metal.

Plans and specifications prepared by this department.

Clerk of works, John Arbour.

Contractor, Paquet & Godbout.

## THETFORD MINES.

## PUBLIC BUILDING.

On August 8, 1903, a contract was entered into for the construction of this building on lot No. 314, which has a frontage of 50 feet on Notre Dame street.

The building consists of a main portion 29 feet by 29 feet having basement, ground floor, first floor and attic. An adjunct in rear 32 feet 6 inches by 23 feet, having ground floor, first floor and basement, also an adjunct on the right side, one story and basement 15 feet 6 inches by 52 feet. The main portion, on the right side, comprises a basement, a ground floor for the post office and the upper floors for the customs offices and caretaker's quarters. The adjunct is for examining warehouse, customs offices, stairway to first floor and w.c. room. The walls of the basement are stone and those of the remaining stores brick ; the partitions, floors and roofs are wood ; the deck of the main portion being covered with tar and gravel.

Plans, &c., prepared by this department.

Clerk of works, Ant. Grégoire.

Contractors, Dussault & Pageau.

## VALLEYFIELD.

## PUBLIC BUILDING.

On September 14, 1903, a contract was entered into for the construction of this building on a plot of ground on the south side of Victoria street, extending back to Ste. Cecile street and having a lane on western side. There is a main portion 60 feet deep by 64 feet frontage, three stories and basement and an adjunct in rear, 67 feet deep by 28 feet broad, one story and basement. On the north-west angle of the main building is a tower, two additional stories in height. The ground floor of the main portion contains the main stairway, passage to adjunct, light shaft, brick vault and a post office 54 feet by 43 feet, lighted on three sides, and having an entrance on both at front and rear. In the adjunct are the examining warehouse, the gas inspector's office, the weights and measures office and the w.c.'s. On the first floor are the customs and inland revenue offices and a brick vault for the customs long-room, and in the second floor are eight rooms and bath-room for caretaker's quarters. Opening on the stairway between the ground and first floor is a mezzanine for w.c. and lavatory-room. The basement is for fuel and furnace-rooms. The walls of the basement and ground floor are stone, and of the remaining floors brick ; the partitions, floors, and roof are of wood ; the cornices and coping are metal covered and the roof is covered with tar and gravel.

Plans, &c., prepared by this department.

Clerk of works, Edmond Lemay.

Contractor, Théodore Bélanger.

4-5 EDWARD VII., A. 1905

## PROVINCE OF ONTARIO.

## ALEXANDRIA.

## POST OFFICE BUILDING.

A site for this building was obtained on the corner of Catherine and Main streets, with frontages of 65 feet and 42 feet respectively, and, on October 23, 1903, a contract was entered into for the construction of the building thereon. It is two stories of brick on a stone basement with a wooden attic and having a portion at the angle of the streets, 12 feet by 12 feet carried up two additional stories in brick covered by a pyramidal roof. The basement will contain the heating apparatus, fuel and stores; the ground floor, the post office and examining warehouse; the first floor three rooms and a bathroom and the attic three rooms.

Plans, &c., prepared by this department.

Clerk of works, John R. Chisholm.

Contractor, Jos. Bourque.

## BOWMANVILLE.

## PUBLIC BUILDING.

A site on the corner of Temperance and King streets, with frontages of 99 feet and 66 feet respectively, was obtained and on November 2, 1903, a contract for the construction of the building was entered into. There is a main portion 64 feet by 32 feet, exclusive of projections, two stories basement and attic, a portion of which 12 feet by 12 feet is carried up two stories higher and covered with a pyramidal roof, and a one story and basement adjunct 15 feet by 32 feet. The external walls are of brick on a stone basement, the roofs, floors and partitions wood. There is a brick safe on the ground floor and one on the first floor. The ground floor of the main building is for the post office and that of the adjunct for the examining warehouse and w.c.'s; on the first floor are five offices, a brick vault and a w.c. room; the attic, six rooms and a bathroom for the caretaker, and the basement is for heating apparatus, fuel and storage.

Plans, &c., prepared by this department.

Clerk of works, Ferdinand B. Whiting.

Contractor, Wm. Stuart.

## BRANTFORD.

## DRILL HALL.

On June 9, 1904, a contract was entered into for alterations and additions to this building.

The additions comprise a two-story and basement strip extending across Park street front; an octagonal, three story and basement, tower on the corner of Park and River fronts; an additional story on leanto on river front and a small two story addition on Elizabeth street, to the caretaker's quarters. With these additions and some alterations the structure will contain as follows, viz.:—a basement under the park frontage for a shooting gallery, a stairway and a lavatory; under the river front for furnace and fuel rooms and under the caretaker's quarters for store-rooms; on the ground floor besides the drill hall which is 166 feet by 78 feet, there are a band-room, quartermaster's stores, quarter master's office, eight armouries, an orderly room, a commanding officer's room and six rooms for caretaker. On the first floor a lecture room, a sergeants room, four officers rooms, a recreation room and lavatories.

Plans, &c., prepared by this department.

Clerk of works, L. H. Taylor, architect.

Contractor, Schultz Bros. Co.

## SESSIONAL PAPER No. 19

## COBOURG.

## ARMOURY AND GUN SHED.

A contract was entered into on February 24, 1904, for the construction on a plot of ground having frontages on Spring, Albert and King streets, the front of the building to be on King street. The building is to be two stories in height, 112 feet in depth exclusive of a stairway lobby in the rear and an entrance porch in front by 74 feet in breadth excepting the front portion on King street which is 110 feet by 28 feet in depth. There are to be two stories of brick on a stone foundation, only a portion of which is to be excavated. The excavated portion will consist of a shooting alley extending throughout the entire front by a depth of 22 feet having in its rear a staircase hall, beyond which is to be a furnace and fuel room. The ground floor will comprise the field battery gun shed 83 feet by 35 feet, the garrison artillery gun shed 46 feet by 35 feet, five harness rooms, one armoury, two story rooms, three vestibules and three staircase halls. The second floor will have a recreation hall, two mess rooms, two commanding officers' rooms, two officers' rooms, two armouries, a quartermaster's room, two lavatory rooms and six rooms for the caretaker's residence. The partitions throughout and the covering of the skylights are to be galvanized iron; the floors and roof are to be wood; the roof to be covered with tar and gravel.

Plans, &c., prepared by this department.

Resident architect, C. Carruthers.

Contractor, David S. Booth.

## OTTAWA.

## CENTRAL EXPERIMENTAL FARM.

Fifteen wire screens and 22 fly screens were furnished for the windows of the laboratory, and repairs were made to 18 chairs. The director's dwelling and those of 9 other officers had the interiors cleaned, painted, papered and tinted. The walls of conservatory and the plastering in 10 of the officers' dwellings were repaired.

Electric lighting was installed throughout the farm buildings and officers' residences.

The farm foreman's residence, a building which was on the farm at the time of purchase by the government, was overhauled and put in thorough repair. A cellar was excavated, the building was raised, a concrete foundation built thereunder and a hot water heating system installed.

Some additions, alterations and repairs were effected in connection with the plumbing and heating of the various buildings, and a quantity of wire fencing was put up.

Work done under the supervision of this department.

## CENSUS OFFICES, SPARKS AND O'CONNOR STREETS.

This is a rented building. Four electire fans were installed, two on ground and two on first floor and minor necessary repairs effected.

## EASTERN BLOCK.

New hardwood floors were laid in the attic rooms and corridors of the Department of Indian Affairs as well as in four rooms of the Auditor General's offices; the walls and wood work of five rooms of the Auditor General's offices were cleaned and painted; the attic rooms and corridors of the Indian Affairs offices were cleaned, tinted and painted as also were nine rooms for the finance, three for the Privy Council and five for His Excellency the Governor General. New sashes and frames were put in the rooms of the Indian Affairs in attic, and lights of glass were reglazed through-

4-5 EDWARD VII., A. 1905

out the building ; articles of furniture were supplied the various departments as well as rods and curtains, shelving, drawers and cushions, while articles of furniture were repaired. A number of steel fittings were supplied to the Auditor General's Department. Additional electric lights, &c., were installed such as portable desk lights, drop light shades, new lavatory basins and sinks, were set up and connected, and branch services from main to existing basins. New heating coils were fitted up, also electric fans and electric bell services put in. There were minor jobs such as lettering, painting, &c., and joinery. The double windows and summer blinds were taken off, stored, cleaned and put on periodically and the roofs, footpaths and roads kept free from snow during winter.

Work done under the supervision of this department.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

#### GOVERNMENT HOUSE.

On the morning of April 3, 1904, a fire broke out in the ground floor of the west wing of the hall resulting in the destruction of a part of the interior of the wing and of a part of the interior of the main house as well, also causing damage to carpets, fixtures, furniture, &c., both directly and by water. The damage to the building was immediately repaired ; a new skylight was built over the w.c.'s, and, a new hopper roof over the wing. The galvanized iron coverings of copings were renewed ; all the fireplaces had fire brick linings substituted for those of tile and the hearths broadened, and the lincrusta dado destroyed by fire was replaced in wood. A large quantity of new plastering, flooring, wood finishings, fixtures, painting, &c., as well as new electric wiring throughout the new wing were necessitated by the fire. In the main house the cock loft was floored the inside of the roof lathed with metal and plastered with asbestic, a brick firewall with iron door put in and a fire escape fitted on outside of wall—all as a protection against fire.

Additions were made to the system of drainage, which was referred to in last year's report, inclusive of 971 feet of 6 inch and 9 inch tile drains serving the workshops, stable and dairy, together with cedar curbs, cast iron grates, &c.

The stage in the ball room had the gas piping removed and electric wiring installed, new scenery was prepared and a temporary stepped floor laid throughout the ball room to fit it for use as an auditorium. A portion of the plastering of ball room and of tennis court was renewed. New screen doors were hung at entrance of cloak room, a book case, four stepladders and 85 packing cases of various sizes and uses were supplied. A new plate warming cabinet was supplied to the kitchen where some parts of the ranges, fireplaces, &c., were renovated and cleaned. A wooden lean-to 24 feet by 13 feet, for the storage of farming implements, was built at the rear of the small greenhouse. Two old lean-tos at gardener's house were pulled down and the shed straightened, underpinned and enlarged by an addition 30 feet by 12 feet, the roofs of old and new portions shingled and the walls clapboarded.

The cottage was cleaned throughout and a number of rooms papered, distempered and painted, including all the rooms in basement, which also had the woodwork painted. The verandah was repaired and painted and some carpet, a table and a number of chairs supplied.

The toboggan slides were pulled down, being unsafe, and a new slide 300 ft. by 47 ft. and 6 ft. wide, with all the necessary stairs, landing, rails, &c., was constructed on the original site.

At the hall there were 1,875 yards of painting, 955 yards of cleaning and tinting done, and 567 sup. ft. of broken glass renewed, exclusive of that done to the damaged portions of the house.

A quantity of china, earthenware, glass and napery, was supplied to make up deficiencies and the kitchen coppers were retinned.

## SESSIONAL PAPER No. 19

The boat-house and float as well as the road thereto were kept in repair—157 ft. of new plank sidewalk and crossings were laid as well as all the existing walks kept in good repair; 327 ft. of close board fence 12 ft. high was built; 5 gates were renewed and repairs made to wooden and wire fences throughout. A wire netting 200 ft. long was put up along the flower borders adjoining the tennis lawn. Hot-bed sashes were supplied and the conservatories repaired and painted.

The two large lower lawns were regraded with additional soil and resodded. Fruit trees, bulbs, seeds, plants, gardening tools and other necessities were supplied for kitchen and flower gardens.

The conservatories were kept in order, the lawns, drives, &c., rolled and otherwise tended. The ice-house was stored with ice. The roofs, paths, slides, rinks, &c., were cleared of snow by the departmental staff, by whom the grounds, lawns, gardens and plant houses were maintained.

The usual periodic cleaning, packing and unpacking were done; arrangements for and attendance on entertainments were furnished, and the rinks, slides, &c., kept in order.

Works done under the superintendence of Wm. Hutcheson, clerk of works.

## LANGEVIN BLOCK.

Two hundred and twenty-five yards of concrete flooring was laid in basement; the fire-box of the steam boiler was re-lined with fire-brick; 4 rooms were cleaned, tinted and painted; one office had a new hardwood floor; 1 new glazed partition was put up; 16 cupboards and pigeon-hole cases were supplied to the Agriculture Department, and of other articles of furniture there were supplied 22 to the Agriculture Department, 35 to the Interior, and 58 to the Post Office Department. Considerable repairs were made to furniture and fittings, 53 panes of glass were reglazed and a large number of minor works, among which were 136 jobs of painting, lettering, &c., and 131 jobs of joinery.

A large number of steel fittings were supplied to the Agriculture, Interior and Post Office Departments. There were installed additional electric lights, as follows: 43 electric lamps, 19 drop lights, 116 drop lights, 2 ceiling lights, 74 portable lamp-stands, and 4 meridian electric lamps. The electric bell systems of the Post Office and Agriculture Departments were rearranged, an indicator box was put up in the Interior Department, as well as two new bell services. One wall 'phone, one wash basin and one water closet were fitted up.

Work done under the supervision of this department.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

## LABOUR DEPARTMENT.

This is a suite of rented offices, situated on Metcalfe street, opposite the Langevin Block. Three rooms were cleaned, tinted and painted, a large quantity of shelving was put in attic as well as cupboards and 8 pieces of furniture. Repairs were made to the glazing, painting and joinery.

## GEOLOGICAL MUSEUM.

The laboratory room in basement was fitted up and the original drawing offices added to the library and fitted up with shelves, cupboards, pigeon-holes, book-cases, tables, chairs, drawer cases, &c. The walls of these as well as four of the offices were cleaned and tinted and the woodwork painted or oiled and varnished. The caretaker's quarters were cleaned, painted, papered, tinted, &c., throughout. Extensive repairs were made to walls and chimneys of the museum building, and a new chimney was



4-5 EDWARD VII., A. 1905

built. The rented annex was provided with a hot water heating apparatus, some additional electric lamps and drop lights, and plumbing and water supply services.

In the library the heating coils were altered and in part renovated, some additional coils were fitted up in one of the offices and alterations made to plumbing, &c.

Work done under the supervision of this department.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

#### MAJOR'S HILL PARK.

The new kiosk was completed and painted, the summer benches were repaired and painted. A plank sidewalk 80 feet long was laid on St. Patrick street and the sidewalk on Mackenzie avenue repaired.

#### PARLIAMENT BUILDING.

Four offices were cleaned, tinted and painted; one office had a new hardwood floor; a new porch was built at Commons messengers' entrance; 2 new windows were supplied the Senate, and the floor of the Library cleaned and polished. Forty-one pieces of new furniture and 500 map rollers were supplied; a large quantity of shelving was put up in Library and all the furniture of the House of Commons cleaned. Four additional transformers with marble switchboards, &c., were installed, as also 4 electric fans, one each of 12 ft. and 24 ft., and 2 of 16 ft. diameter; 41 additional electric lights with fixtures, wires, &c., complete, were installed; 4 new rooms in the attic were heated, lighted and fitted up on the Senate side, and also a new lavatory with w.c.'s, basins, lighting, &c. A new English gas stove was fitted up in the Commons restaurant, and a wash basin in the office of the clerk of the House.

The fire-boxes of the boilers were lined with fire bricks; 125 panes of glass were renewed throughout the building; 33 door-plates were lettered and there were 81 minor works of painting and 155 minor works of carpentry effected. Two porch roofs were covered with copper, new galvanized iron ventilation pipes were supplied the House of Commons, as well as 4 new chimney cowl. The carpets were taken up, cleaned and relaid, the double windows and summer blinds were taken off, stored, cleaned and put on periodically, and the roofs, roads and footpaths kept clear of snow during the winter.

Work done under the supervision of this department.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

#### PARLIAMENT GROUNDS.

A portion of the drain at the outlet in river was renewed, and a pier built at outlet. Two large concrete piers were built at the entrance of the dump. The roof of the summer house and all the benches were painted; 185 feet of new benches were provided. Repairs were made to the green-house, and 385 lights of glass renewed therein. Extensive repairs were made to railings in Lovers' Walk.

#### CITY POST OFFICE.

On January 4, 1904, the greater part of the first floor inside, the attic story and the unfinished loft over, were destroyed by fire, and the ground floor damaged by water, and immediate steps were taken by the provision of a temporary roof covering and other works to render it fit for re-occupation by the postal authorities; all of which was accomplished by January 28, 1904. The Customs and Inland Revenue



## SESSIONAL PAPER No. 19

Department which had quarters in the building were removed to the Wood's building, Queen street and the Seybold building, Sparks and O'Connor streets, respectively. It is intended to take down the attic story walls, erect on the first floor walls another story similar thereto and replace the attic story thereon.

Plans, specifications &c., prepared and work carried on under the superintendence of the department.

## PRINTING BUREAU—ADDITION TO WEST WING.

On January 13, 1904, a contract was entered into for a one story addition 50 feet in length by 53 feet in breadth to the north of the west wing. The walls are to be brick on a stone foundation, the ceiling of brick and iron and the floor cement concrete. There is a single row of columns lining with those of the press room and supporting the ceiling. Above the ceiling is a tar and gravel roof covering.

Plans, &c., prepared by this department.

Clerk of works, P. Canty.

Contractors, Wm. Doran and R. M. Devlin.

## PRINTING BUREAU—MINOR WORKS, REPAIRS, &amp;c.

Two rooms in attic were divided by partitions, a glass partition and platform for the linotype machines were built, a new roof was erected over a portion of the yard at the rear of the building and the carpenter's shop was re-shingled. A large portion of the woodwork was repainted and repairs made to glazing. Three hundred and fifteen square yards of granolithic footpaths with 220 feet lin. of gutter was laid outside. A new drain was excavated for and laid, two new manholes were built and a large number of the original drain pipes renewed. A 4 foot sidewalk of 2 inch plank was laid at the west side of the building and a 3 foot walk of similar material 46 feet long, from the building to the gate leading to Nepean Point. A new feed water heater was fitted up in boiler room, changes were made in the gas fixtures, thirty-five new jets were added and a new electric bell installed.

Work done under the supervision of this department.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

## SUPREME AND EXCHEQUER COURTS.

All the offices, corridors, &c., of the Exchequer Court were cleaned, tinted and painted and the glazing repaired. Four pieces of furniture and two sets of large bookcases were supplied and repairs made to joinery. A portable electric lamp was supplied and a system of electric bells between registrar's and secretary's rooms installed.

Work done under the supervision of this department.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

## ROYAL OBSERVATORY.

This building which was described in a previous report is in progress and is expected to be completed at an early date. A hot water heating apparatus is being installed.

Plans, &c., prepared and work superintended by this department.

Clerk of works, P. Canty.

Contractor for construction of the building, Théophile Viau.

Contractors for heating, Butterworth Bros.

4-5 EDWARD VII., A. 1905

## REPAIRING STREETS, &amp;C.

A drain was laid along the western side of the canal from the bridge to the river; the sidewalk on Sappers bridge was repaired and partly renovated; 2,400 square feet of granolithic sidewalk was laid along the Elgin street boundary of Cartier square; scraping, cleaning and general repairs were done to the various roadways, footpaths and streets under the control of the department. Rubbish, scrapings and ashes were removed from the east block, west block, Langevin Block, Parliament Building, the workshops, printing bureau, the museums, the several rented buildings and the various streets and deposited at Nepean Point; the grass at printing bureau, Wellington street, two bridges, fisheries museum and geological museum was kept clipped and the ashes removed from the boiler houses; the roadways, sidewalks, footpaths, roofs and yards kept clean of snow during the winter.

Work done by the departmental staff, C. Leblanc, foreman.

## WESTERN BLOCK.

The floor of the cement testing laboratory in basement with the bed rock under were taken out to a depth sufficient to allow of the placing of new testing machinery. Further works, in completion of this, will be done during the next fiscal year.

In twenty-one offices new hardwood floors were laid, seventy-seven rooms were cleaned, tinted and painted and picture moulding put up in fourteen rooms. There were 261 articles of furniture supplied the various departments throughout the building exclusive of 11 cupboards, 56 brass rods with curtains, 350 hat hooks with boards therefor, 500 wooden pins, 106 sets of map rollers, 6 cushions, 7 map racks, 615 packing cases and 400 window strips. A large number of steel fittings were furnished to the Railways and Canals, Public Works and Inland Revenue Departments. Six new sashes and frames were put in. 13 baize doors were provided and 13 rooms fitted up with shelving, &c. Seven glass partitions were erected and 177 lights of window glass reglazed. There were installed new electric lights as follows:—twenty-two drop lights, ten portable desk lights, one bracket, one meridian and four electrolights with an aggregate of nineteen lights. Four 12-inch electric fans with switches, &c., were installed.

The heating system was improved by the addition of the vacuum apparatus of the Webster system of steam heating.

Three new lavatory basins and a new urinal were fitted up and repairs and alterations made to portions of the bell service.

Of minor jobs of painting and lettering there were 957, and of joinery, 561. The roofs, roads and footpaths were kept free from snow. The winter sashes and summer blinds were cleaned, put on, taken off and stored periodically.

Work done under the supervision of this department.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

## BUILDINGS AND GROUNDS GENERALLY.

In addition to the works mentioned in the foregoing there are innumerable smaller works, *i.e.*, there are 535 items of repair done by the roofers, 278 done by the masons; items taking each from one to five days work of a tradesman besides material to accomplish; and proportionally in connection with the other trades. Besides all these, in connection with the various other buildings, the property of the government, there are similar works of repair, painting, furnishing, tinting, &c., in connection with a number of rented buildings; also such works as repairs to and renewals of coal and other sheds, works of a general character such as the erection and taking down and storing of porches, winter boarding outside steps, &c., &c., all of which are done by the departmental staff.

## SESSIONAL PAPER No. 19

## ST. CATHARINES.

## DRILL HALL.

On June 2, 1904, a contract was entered into for the construction of this building at the intersection of Lake and Elizabeth streets, on the southwest corner. The building is to have a frontage of 218 feet on Elizabeth street and 106 feet on Lake street exclusive of two projections of seven feet six inches towards Elizabeth and minor projections on Lake street. The main hall is to be on the western side with a direct entrance on the North from Lake street and is to be 160 feet by 75 feet inside measurement. On the east and south of the main hall there is to be a two story and part basement range of building containing on the ground floor, the artillery gun shed, eight armouries, three harness rooms, a commanding officer's office, an orderly room, quartermaster's stores, a spare room, a lavatory room, the main entrance to the main hall and the stairway; in the basement the fuel and furnace rooms, and, on the first floor a lecture room, officers' mess room, three sergeants' rooms, a commanding officer's room, an orderly room, an ante-room, three store rooms, a reading room, a veterans room, a band-room and six rooms for the caretaker. The walls are to be bricked with stone dressings and on a stone basement, roofs and floors wood, the roof principals of iron and the roof covering in part metal and the remainder tar and gravel.

Plans, &c., prepared by this department.

Resident architect and clerk of works, G. Dolson.

Contractors, Messrs. Sullivan & Langdon.

## TORONTO.

## GENERAL POST OFFICE.

The contracts, for the lavatory addition to the general post office, the opening up of the ground floor from Adelaide Street through to Lombard Street, the alterations to the first floor, and the erection of a passenger elevator were completed.

A fire-proof vault was constructed and provided with steel fittings.

Additional fittings and furniture were also provided.

Alterations in the arrangement of the fittings and furniture were made, as the alterations to the building proceeded, and the usual repairs to the building and furniture were made.

Work supervised by S. G. Curry, architect, Toronto.

## EXAMINING WAREHOUSE.

Alterations were made to the examining warehouse to provide separate and more commodious accommodation for the express companies until such time as the addition to the warehouse is completed. Repairs were made to the water mains and eave-troughs.

Work supervised by S. G. Curry, architect, Toronto.

## RECEIVER-GENERAL'S OFFICE.

The walls and ceilings of the office of the Receiver-General were painted and a new burglar proof steel safe provided and placed in the vault.

Work supervised by S. G. Curry, architect, Toronto.

4-5 EDWARD VII., A. 1905

## DRILL HALL.

The four corner towers of the drill hall were reroofed above the old roofs, some minor repairs made and a granolithic sidewalk laid in front of the building on University Street.

Work supervised by S. G. Curry, architect. Toronto.

## TORONTO JUNCTION.

## PUBLIC BUILDING.

A site for this building was procured having frontages on Keele street, Dundas street and lane, of 130 feet, 60 feet and 60 feet, respectively, and a contract for the construction entered into May 29, 1903. It is a two story brick building having a wooden mansard attic and a stone basement, measuring 58 feet by 42 feet 6 inches, together with a one-story brick adjunct on a stone basement measuring 16 feet by 42 feet 6 inches. There is a square tower over the principal entrance on Keele and Dundas streets, which extends up two additional stories and is covered with a pyramidal roof. The basement under the adjunct is floored in concrete, and is to contain the heating furnaces and fuel. The ground floor of the main portion is the post office and of the adjunct the examining warehouse; the first floor has the customs long room, collectors' offices, two spare offices and w.c. room, and in the attic are six rooms and a bath room for the caretaker. The floors, stairways, partitions of first floor and attic and the roofs are of wood, the deck and flat roofs being covered with felt and gravel, while the slopes and dormers are metal covered.

Plans, &c., prepared by this department.

Clerk of works, John Patterson.

Contractors, Joy & Needham.

## WINGHAM.

## POST OFFICE.

On June 24, 1904, a contract was entered into for the construction of this building on Josephine street. It is to be a brick building on a stone basement, consisting of a main portion 2½ stories and basement measuring 50 feet by 40 feet, a 4 stories and basement tower measuring 15 feet by 15 feet, and a one story and basement adjunct in rear 28 feet by 19 feet. The floors and roofs are to be wood. The basement will contain heating furnaces, fuel, water closets and store rooms; on the ground floor the main building is to be the post office and the adjunct the customs collector's office, and examining warehouse; on the first and attic floors there are in each six living rooms, exclusive of the bath room in attic.

Plans, &c., prepared by this department.

Contractor, S. S. Cooper.

## PROVINCE OF MANITOBA.

## WINNIPEG.

## POST OFFICE.

A temporary wooden building to provide additional postal facilities was erected by permission of the city corporation on Haymarket square. In the post office build-

## SESSIONAL PAPER No. 19

ing new money order office and savings bank were fitted up ; a fire-proof safe supplied to the customs parcel office ; some fittings and furniture to railway mail office, land offices, shelving and painting to Dominion lands office and painting for the Indian offices.

Work supervised by J. Ernest Cyr, clerk of works, Winnipeg, Man.

## EXAMINING WAREHOUSE.

The public works offices were transferred from the post office building to the first floor of this building which was fitted up and re-arranged for their reception.

Work supervised by J. Ernest Cyr, clerk of works, Winnipeg, Man.

## BRANDON.

## POST OFFICE.

The customs offices were fitted up with cases for books and papers ; additional letter and newspaper boxes were furnished the post office, and the bag rack extended ; some new furniture was supplied ; two new outside porches were built and the fence gates were repaired.

## NORTH-WEST TERRITORIES.

## RED DEER, ALBERTA.

## COURT HOUSE.

A site was obtained comprising lots 9 to 29, both inclusive, in block 18, together with the intervening public lane, thus providing a block having frontages on McKenzie avenue, Ross street and Main street, and on September 7, 1903, a contract was entered into for the construction of the building. The building will be 2½ stories of brick on a stone basement, measuring 53 feet by 34 feet exclusive of projecting porches. The basement is floored with concrete, has a brick vault and three brick cells, and is to contain heating furnace and fuel. The partitions excepting those of cells, the floors excepting basement, the roof, porches and stairways are wood. The ground floor contains two vestibules, two stairways, a passage, one brick safe, two offices for lands, a guard room, 3 cells for prisoners, a kitchen, a store-room and two projecting porches. There are four entrances, one in front, one in rear and two on the right side. On the first floor, mid-length, is the court room occupying all but 16 feet at either end and extending up into the attic. At one end of the court room are rooms for judge, jury and bar, and at the other a room for witnesses.

Plans, &c., prepared by this department.

Clerk of works, Hugh Clark.

Contractors, Johnston & Tait.

## REGINA, ASSINIBOIA, WEST.

## IMMIGRATION BUILDINGS.

A two and a half stories wooden building, 60 feet in length by 31 feet 6 inches in breadth with a one story, 16 feet by 14 feet in rear. There is no basement, the

4-5 EDWARD VII., A. 1905

building resting on a foundation of wooden blocks. There is a detached wooden building 16 feet 6 inches by 10 feet 6 inches for latrines.

On the ground floor of the main building are a hall, an office, a kitchen and six rooms of various sizes. The one story adjunct is for use as an outside kitchen. On the first floor are a passage from end to end and on either side, six rooms. The attic is unfinished.

Plans, &c., prepared by this department.

Clerk of works, John Morrison.

Contractor, D. C. Macdougall.

## PROVINCE OF BRITISH COLUMBIA.

### NANAIMO.

#### PUBLIC BUILDING.

On May 4, 1904, a contract was entered into for a one story and basement addition to accommodate the Customs Department. The addition will be of stone similar in detail to the original building 45 feet long by 40 feet broad and containing in the basement a brick safe opening into the examining warehouse under the original building, a w.c. room, a stairway hall and a furnace and fuel room; the partitions and piers in basement are to be of brick and the floor concrete. The ground floor will contain the examining warehouse, an office for the collector and two brick vaults are opening into the long-room and the other into the post office in the original building. There is to be a public entrance on the street front and an entrance to the stairway hall from the post office.

Plans, &c., prepared by this department and work supervised by Wm. Henderson of this department, Victoria, B.C.

Contractor, Alexander Forrester.

### NEW WESTMINSTER.

The ground adjoining the building was excavated, graded, covered with mould, seeded down with grass and the roads gravelled. A cement concrete gutter was laid at north-east end of grounds and the external surface of north-east wall plastered with cement mortar.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

### ROSSLAND.

#### DRILL SHED.

A contract for the construction of this building was entered into on June 13, 1904. It is to be a brick building on a stone basement, the latter lined with brick and having brick partitions and concrete floor. The building is to be 102 feet in length, exclusive of an entrance porch 14 feet 10 inches by 8 feet 6 inches, and 52 feet in width. The basement story is 10 feet from floor to ceiling, and the ground floor 27 feet. In the basement are to be a shooting gallery 85 feet by 15 feet, an armoury 48 feet by 30 feet, a furnace-room, a fuel-room, a store-room, a shower-room and a water closet. The

## SESSIONAL PAPER No. 19

ground floor excepting, 12 feet of the length, which is divided into officers' room and N.C.O. room, is the drill hall. There is a gallery above the officers' rooms at the end of the hall with a stairway thereto. The flooring, partitions and stairs on the ground floor as well as the roof are to be wood, the roof covering of metal.

Plans, &c., prepared by this department.

Clerk of works, R. W. Grigor.

Contractor, Geo. Gillett.

## VANCOUVER

## PUBLIC BUILDING.

The mails roadway was paved with wood blocks on a concrete foundation, properly drained, and the cement sidewalk in front of building repaired. Alterations were made in basement for caretaker's rooms involving building up openings in brick walls, also plastering, carpentry, papering, kalsomining and varnishing. The floor of public lobby was removed and replaced by one of oak. The stamp-vendor's office in lobby was removed, a new stamp-vendor's office was constructed and the writing desk was altered in position. Tables were made and pigeon-hole cases fitted up for delivery office and for sorting-room, two half doors for money order office and shelves in post office inspector's cupboard. Sixty-seven post office lock boxes were numbered, the bulletin boards were painted and lettered and iron bars were fitted in position outside of registry office. Partitions in customs long-room were taken down to give additional accommodation; a platform and shelving was constructed and three brass plates engraved for customs. The flag-pole was painted and ball thereof gilded.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

## DRILL HALL.

The external surface of the walls of building was plastered in cement mortar and the battlements and all stonework painted in mastic. All under the supervision of Wm. Henderson, of this department, Victoria, B.C.

## VICTORIA.

## DRILL HALL.

A cement concrete sidewalk having block paved driveways was laid along the Menzies street line of the property by the municipal staff of workmen.

## INDIAN AFFAIRS AND MARINE OFFICE (OLD CUSTOM HOUSE).

A new picket fence was erected at front and sides of property with double gate for cart entrance to wharf and single for foot passengers, and the old fences and gates were repaired. A new water main with connections to wharf was laid and lavatory basins fitted up in the offices of the boiler inspector and Superintendent of Indian Affairs.

The fire-places in Indian Department were built up and a new stove and pipes supplied therein. A bath was fitted up and connected in caretaker's quarters and the closet tanks were cleaned and repaired. The fences and flag pole were painted.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

4-5 EDWARD VII., A. 1905

## OLD POST OFFICE BUILDING.

A cement concrete sidewalk was laid along the Menzies street line of the property by the municipal staff of workmen.

The cement work on main cornices of building and on firewalls at north and south ends was renewed and repaired. The south wall was plastered, the chimneys repaired with cement mortar. The ground floor joisting and flooring were renewed, the partitions underpinned and the sleeper walls repaired and in part renewed. One large plate glass window was inserted in the front, the skylights were renovated and a part of the gravel roof repaired. A new tank was supplied, and the plumbing cleaned out and repaired generally. The flag pole was taken down and securely replaced and painted. The whole of the front of the building as well as those portions of the ends exposed above adjoining buildings was painted.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

## PUBLIC BUILDING.

The granite steps at public entrances were roughened to prevent slipping and a portion of the cement sidewalk was taken out and replaced. Heating stoves and pipes were supplied and fitted up in examining warehouse, the heating furnaces were provided with new gaskets and some new hangers were put in to suspend the large furnace smoke-pipe. One thousand feet of shelving was provided in basement for Assistant Receiver General and some openings in brick walls were built up anent same. A wash basin was fitted up and connected, and also a portable lamp provided for the Collector of Customs. Eight rubber mats, screw hooks, bulletin boards and a cupboard were supplied to the customs, a rug to the Savings Bank Department, and mail bag racks, letter racks, sorting table, two cases of pigeon-holes and a shelf on iron pillar for post office. Repairs were made to copper roof, cornices and vallies, cisterns in caretaker's quarters, bath connections, two wash basins and one wash basin waste, the passenger elevator, the doors of post office, an oak screen in Customs and the plastering in basement. One blind and also four lettered zinc signs were supplied and some bulletin boards lettered. Two hundred and twenty-five feet of shelving and one hundred and eight new lock drawers were fitted up in post office, and the mail bag rack on ss. 'Victoria' was fitted up with bag hooks. The stamp vendor's office was changed in position; a wash basin was fitted up and connected in the Savings Bank Department and a smoke consumer constructed in basement.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

## WILLIAMS HEAD.

## QUARANTINE STATION.

A concrete step was placed at the bottom of each flight of wooden steps throughout; the north wall of the boiler house was plastered with cement mortar; the cement concrete floor in boiler house and the brickwork of boiler were repaired and the roof of boiler house was coated with pitch and gravel. New elbows were put on conductor pipes of main hospital and first-class detention buildings, a new engine cross-head and one arc lamp were supplied and the water supply pipes in main hospital building were renewed and repaired. The tramway on wharf was extended twenty-five feet. Two hundred feet of shelving was fitted up in laundry building.

Work done under the supervision of Wm. Henderson, of this department, Victoria, B.C.



## SESSIONAL PAPER No. 19

DOMINION PUBLIC BUILDINGS, JUNE 30, 1904, EXCLUSIVE OF THE  
PENITENTIARIES, INDUSTRIAL SCHOOLS, MARINE HOS-  
PITALS AND MOUNTED POLICE BUILDINGS.

## PROVINCE OF NOVA SCOTIA.

Amherst, public building.  
Annapolis, public building.  
Antigonish, public building.  
Arichat, post office.  
Baddeck, public building.  
“ armoury.  
Dartmouth, post office.  
Digby, public building.  
Guysborough, public building.  
Halifax, custom house (in progress).  
“ Dominion building.  
“ drill hall.  
“ examining warehouses (rented building).  
“ immigration building.  
“ quarantine (Lawlor's island).  
Kentville, public building.  
Liverpool, post office.  
Lunenburg, public building.  
Middleton, armoury.  
Nappan, experimental farm.  
New Glasgow, public building.  
North Sydney, public building.  
Pictou, custom house.  
“ post office.  
“ quarantine station.  
Springhill, public building.  
Sydney, public building.  
“ quarantine station.  
Truro, public building.  
Windsor, public building.  
“ drill hall.  
Yarmouth, public building.

## PROVINCE OF PRINCE EDWARD ISLAND.

Charlottetown, Dominion building.  
“ quarantine station (South port).  
Montague, post office.  
Summerside, public building.

4-5 EDWARD VII., A. 1905

## PROVINCE OF NEW BRUNSWICK.

Bathurst, public building.  
 Carleton (St. John, West), public building.  
 Dalhousie, post office.  
 Fredericton, infantry school.  
     " public building.  
 Marysville, post office.  
 Middle Island, quarantine.  
 Moncton, public building.  
 Newcastle, public building.  
 Portland (St. John, North), post office.  
 Richibucto, public building.  
 St. John, custom house.  
     " drill hall.  
     " immigration building.  
     " post office.  
     " quarantine (Partridge Island).  
     " savings bank.  
 St. Stephen, public building.  
 Sussex, public building.  
     " armoury.  
 Tracadie, Lazaretto.  
 Woodstock, public building.

## PROVINCE OF QUEBEC.

L'Assomption, post office.  
 Aylmer, post office.  
 Berthierville, post office.  
 Buckingham, post office.  
 Coaticook, public building.  
 Drummondville, public building.  
 Dundee, customs house.  
 Fraserville, public building.  
 Farnham, post office.  
 Granby, public building.  
 Grosse Ile, quarantine station.  
 Hochelaga, post office.  
 Hull, post office.  
 Joliette, public building.  
 Lachine, post office.  
 Laprairie, post office.  
 Lévis, immigration shed.  
     " cattle quarantine.  
 Montreal, custom house.  
     " drill hall.  
     " examining warehouse.  
     " Inland Revenue building.  
     " post office.  
 Péribonka, immigration building.

## SESSIONAL PAPER No. 19

PROVINCE OF QUEBEC—*Concluded.*

Quebec, artillery workshops.  
“ cartridge factory.  
“ citadel.  
“ custom house.  
“ drill hall.  
“ examining warehouse.  
“ immigration building.  
“ iron foundry.  
“ marine agency.  
“ observatory.  
“ post office.  
Richmond, public building.  
Rimouski, public building.  
Roberval, immigration building.  
St. Henri, post office.  
St. Hyacinthe, public building  
“ inland revenue building.  
St. Jérôme, public building.  
St. Johns, public building.  
“ infantry school.  
St. Régis, custom house.  
Sherbrooke, public building.  
Sorel, public building.  
Thetford Mines, public building.  
Three Rivers, custom-house.  
“ post office.  
Valleyfield, post office (in progress).  
Victoriaville, public building.

## PROVINCE OF ONTARIO.

Alexandria, public building (in progress).  
Almonte, public building.  
Amherstburg, public building.  
Arnprior, public building.  
Barrie, public building.  
Berlin, public building.  
Belleville, public building.  
Bowmanville, post office.  
Brampton, public building.  
Brantford, public building.  
Brockville, public building.  
“ drill hall.  
Carleton Place, public building.  
Cayuga, post office.  
Chatham, public building.  
Clinton, post office.  
Cobourg, public building.  
Cornwall, public building.  
Deseronto, public building.

4-5 EDWARD VII., A. 1905

PROVINCE OF ONTARIO—*Continued.*

- Dundas, armouries.  
“ post office (rented building).  
Fort William, public building.  
Galt, public building.  
Gananoque, custom house.  
“ post office.  
Goderich, public building.  
Guelph, public building.  
Hamilton, public building.  
“ drill hall.  
“ custom house (old).  
Ingersoll, public building.  
Kingston, custom house.  
“ drill hall.  
“ Military College buildings, Fort Frederick.  
“ post office.  
Lindsay, public building.  
London, custom house.  
“ drill hall.  
“ infantry school.  
“ post office.  
Napanee, public building.  
Niagara Falls, public building.  
Orangeville, post office.  
Orillia, public building.  
Ottawa, Central Experimental Farm  
“ drill hall.  
“ Eastern Departmental block.  
“ Fisheries Museum and Art Gallery.  
“ Geological Museum.  
“ Government House.  
“ Langevin block.  
“ laboratory (bacteriological).  
“ military store building.  
“ observatory.  
“ Parliament Buildings.  
“ Printing Bureau.  
“ post office, customs and inland revenue.  
“ Supreme and Exchequer Courts  
“ Western departmental block.  
Paris, public building.  
Pembroke, public building.  
Petrolia, public building.  
Peterborough, custom house.  
“ post office.  
Picton, public building.  
Port Arthur, public building.  
Port Colborne, public building.  
Port Dalhousie, custom house  
Port Hope, public building.  
Prescott, custom house.

## SESSIONAL PAPER No. 19

PROVINCE OF ONTARIO—*Concluded.*

Prescott, Fort Wellington.  
“ post office.  
Rat Portage, public building.  
Sarnia, immigrant building.  
Smith's Falls, public building.  
St. Catharines, public building.  
“ drill hall.  
St. Thomas, armoury  
“ public building.  
Sarnia, public building.  
Sault Ste. Marie, public building.  
Strathroy, public building.  
Stratford, public building.  
Toronto, custom house.  
“ drill hall.  
“ examining warehouse.  
“ immigration building.  
“ infantry school and drill shed.  
“ post office.  
“ postal station ‘A.’  
“ postal station ‘C.’  
“ Junction, public building.  
Trenton, public building.  
Walkerton, public building.  
Windsor, drill hall.  
“ public building.  
Woodstock, public building.

## PROVINCE OF MANITOBA.

Brandon, experimental farm.  
“ immigration building.  
“ public building.  
Birtle, immigration station.  
Dauphin, immigration station.  
East Selkirk, immigration shed (old C.P.R. round house).  
Fort Osborne, infantry school.  
Minnedosa, immigration shed.  
Portage la Prairie, public building.  
Winnipeg, custom house.  
“ examining warehouse.  
“ immigration hospital.  
“ immigration hall.  
“ lands office.  
“ post office.

4-5 EDWARD VII., A. 1905

## NORTH-WEST TERRITORIES.

*Alberta.*

Calgary, court house.  
     " immigrant shed.  
     " public building.  
 Edmonton, immigration shed.  
     " registry office.  
     " jail (in progress).  
 Lethbridge, public building.  
     " immigration building.  
 MacLeod, custom house.  
     " court house.  
 Red Deer, court house.  
 St. Mary's, custom house.  
 Strathecona, immigration building.

*Assiniboia East.*

Carnduff, court house.  
 Indian Head, experimental farm.  
 Moosomin, court house.  
 Qu'Appelle, immigrant shed.  
 Wolseley, court house.  
 Yorkton, court house.

*Assiniboia West.*

Medicine Hat, court house.  
     " immigration shed.  
 Moosejaw, court house.  
 Regina, court house.  
     " council chamber  
     " government house.  
     " government offices.  
     " immigration shed.  
     " land and registrar's office.  
     " post office.

*Saskatchewan.*

Battleford, commandant's residence.  
     " government house  
     " immigrant shed.  
     " magistrate's residence.  
     " registrar's residence.  
     " registry office.  
 Prince Albert, court house and jail.  
     " immigrant shed  
     " land and registry office.  
 Saskatoon, immigration building.

## SESSIONAL PAPER No. 19

## YUKON TERRITORY.

Clear Creek, mining office.  
Dawson, administration building.  
    "    court house.  
    "    commissioner's residence.  
    "    post office.  
    "    departmental stores.  
    "    telegraph office.  
Whitehorse, post office.

## BRITISH COLUMBIA.

Agassiz, experimental farm.  
Kaslo, armoury.  
Kamloops, armoury.  
    "    public building.  
Nanaimo, public building.  
Nelson, public building.  
    "    armoury.  
New Westminster, drill hall.  
    "    public building.  
Revelstoke, armoury.  
Rossland, public building.  
    "    armoury.  
Vancouver, immigrant building.  
    "    drill hall and gun shed.  
    "    public building.  
Victoria, artillery barracks.  
    "    drill hall.  
    "    custom house (Marine and Indian Affairs offices).  
    "    military storehouse.  
    "    post office (old).  
    "    powder magazine.  
    "    public building.  
William's Head, quarantine station.





PART IV

CHIEF ENGINEER'S REPORT

ON

HARBOUR AND RIVER WORKS

INCLUSIVE OF

GRAVING DOCKS AND DREDGING OPERATIONS

ALSO

ROADS, BRIDGES AND SURVEYS THROUGHOUT THE DOMINION.



## REPORT OF THE CHIEF ENGINEER

---

DEPARTMENT OF PUBLIC WORKS OF CANADA,  
CHIEF ENGINEER'S OFFICE,

OTTAWA, December 15, 1904.

FRED. GÉLINAS, Esq.,

Secretary,

Department of Public Works.

SIR,—I have the honour to submit the annual report on the various works under my charge during the fiscal year ended June 30, 1904.

These works comprise the construction and repair of wharfs, piers, breakwaters, dams, weirs, bank and beach protection works ; the improvement of harbours and rivers by dredging ; the construction, maintenance and operation of government dredging plant ; the construction and maintenance of graving docks ; the construction, maintenance and working of slides and booms ; the construction and maintenance of interprovincial bridges and approaches thereto, and of bridges on highways of federal importance in the North-west Territories and the maintenance of military roads ; also hydrographic and ordinary surveys and examinations, inclusive of precision levelling and geodetic measurements which are required for the preparation of plans, reports and estimates ; the testing of cements, &c.

I have the honour to be, sir,

Your obedient servant,

EUG. D. LAFLEUR,  
*Acting Chief Engineer.*

4-5 EDWARD VII., A. 1905

During the fiscal year 1903-04, surveys, examination or inspections were made at the following places :—

## NOVA SCOTIA.

Abram's River, Yarmouth County.	Middle East Pubnico, Yarmouth County.
Argyle Sound, Yarmouth County.	Mill Cove, Lunenburg County.
Avonport, Hants County.	Musquodoboit, Halifax County.
Baddeck, Victoria County.	Necum Teuch, Halifax County.
Bass River, Colchester County.	Neil's Harbour, Victoria County.
Breen Pond, Antigonish County.	Newport Landing, Hants County.
Broad Cove, Inverness County.	Noel, Hants County.
Canning, King's County.	Ogilvies, King's County.
Charlo's Cove, Guysboro County.	Parker's Cove, Annapolis County.
Cheggogin, Yarmouth County.	Peggy's Cove, Halifax County.
Cheggogin Point, Yarmouth County.	Pembroke, Hants County.
Cherry Hill, Lunenburg County.	Petite Rivière, Lunenburg County.
Cheverie, Hants County.	Picket Pier, King's County.
Church Point, Digby County.	Plympton, Digby County.
Clam Harbour, Halifax County.	Port au Pique, Colchester County.
Country Harbour, Guysboro County.	Port Beckerton, Guysboro County.
Cow Bay, Halifax County.	Porter's Lake, Halifax County.
Cribbin's Point, Antigonish County.	Port George, Annapolis County.
Cunningham's Point, Guysboro County.	Port Maitland, Yarmouth County.
Deep Brook, Annapolis County.	Poulamond, Richmond County.
D'Escousse, Richmond County.	Prospect, Halifax County.
Devil Island, Halifax County.	Quoddy, Halifax County.
Digby, Digby County.	Rawdon, King's County.
Duncan's Cove, Halifax County.	Round Hill, Annapolis County.
East Jeddore, Halifax County.	Sandy Cove, Digby County.
Economy, Colchester County.	Sanford, Yarmouth County.
Five Islands, Colchester County.	Saulnierville, Digby County.
Freeport, Digby County.	Scott's Bay, King's County.
French Village, Halifax County.	Short Beach, Yarmouth County.
Grand Etang, Inverness County.	Spry Bay, Halifax County.
Granville Centre, Annapolis County.	Summerville, Hants County.
Grosses Coques, Digby County.	Tancook, Lunenburg County.
Hampton, Annapolis County.	Tenecape, Hants County.
Hantsport, Hants County.	Three Fathoms Harbour, Halifax County.
Herring Cove, Halifax County.	Tittle Passage, Guysboro County.
Horton Landing, King's County.	Tiverton, Digby County.
Indian Harbour, Halifax County.	Upper Granville, Annapolis County.
Iona, Victoria County.	Victoria, King's County.
Janvrin's Island, Richmond County.	Walton, Hants County.
Kingsburg, Lunenburg County.	Wedge Point, Yarmouth County.
Kingsport, King's County.	Wentworth, Hants County.
Little Bras d'Or, Cape Breton County.	West Arichat, Richmond County.
Little Brook, Digby County.	West Chezzetcook, Halifax County.
Litchfield, Annapolis County.	Westport, Digby County.
Long Point, Inverness County.	West Pubnico, Yarmouth County.
Lower East Pubnico, Yarmouth County.	White's Cove, Digby County.
Lower West Pubnico, Yarmouth County.	Windsor, Hants County.
Margaretville, Annapolis County.	Wolfville, King's County.
Melbourne, Yarmouth County.	Yarmouth Bar, Yarmouth County.
Meteghan, Digby County.	Yarmouth Harbour, Yarmouth County.
Meteghan River, Digby County.	

## SESSIONAL PAPER No. 19

## PRINCE EDWARD ISLAND.

Aitken's Shore Pier, King's County.	McPherson's Cove, King's County.
Belfast Pier, Queen's County.	Mink River Pier, King's County.
Belle River, Queen's County.	Murray Harbour South, King's County.
Cascumpec Harbour, Prince County.	Oyster Bed Bridge, Queen's County.
Charlottetown (Marine & Fisheries Dep.	Savage Harbour, King's County.
Pier), Queen's County.	Sturgeon Pier, King's County.
China Point Pier, Queen's County.	Vernon River, Queen's County.
Cove Head Harbour, Queen's County.	Victoria Pier (Crapaud), Queen's County.
Greek River Pier, King's County.	West Point Wharf, Prince County.
Higgin's Shore Pier, Prince County.	Wood Islands Breakwaters, Queen's County

## NEW BRUNSWICK.

Anderson's Hollow, Albert County.	Mispec, St. John County.
Bathurst, Gloucester County.	Mizonette, Gloucester County.
Bay du Vin (Lower), Northumberland	Negropoint, St. John County.
County.	Neguac, Northumberland County.
Beaver Harbour, Charlotte County.	Nelson, Northumberland County.
Belliveau, Westmoreland County.	North Head, Charlotte County.
Black Brook, Northumberland County.	North-west Miramichi, Northumberland
Buctouche, Kent County.	County.
Burnt Church, Northumberland County.	Oromocto, Sunbury County.
Campbellton, Restigouche County.	Partridge Island, St. John County.
Cape Tormentine, Westmoreland County.	Pointe du Chêne, Westmoreland County.
Caraquet, Gloucester County.	Quaco, St. John County.
Chockfish, Kent County.	Richibucto, Kent County.
Dalhousie, Restigouche County.	River St. John, York & Carleton County.
Edgett's Landing, Albert County.	St. Andrews, Charlotte County.
Edmundston, Madawaska County.	St. George, Charlotte County.
Fort Dufferin, St. John County.	St. Louis, Kent County.
Fredericton, York County.	St. Stephen, Charlotte County.
Gagetown Creek, Queen's County.	Sand Point (St. John Harbour), St. John
Grande Anse, Gloucester County.	County.
Grand Falls, Victoria County.	Seal Cove, Charlotte County.
Grimrose Canal, Queen's County.	Shippegan, Gloucester County.
Grindstone Island, Albert County.	Stonehaven, Gloucester County.
Hillsboro, Albert County.	Tracadie, Gloucester County.
Hopewell Cape, Albert County.	Tynemouth Creek, St. John County.
Hopewell Hill, Albert County.	Upper Salmon River, Albert County.
Lameque, Gloucester County.	Wilson's Beach, Charlotte County.
Lord's Cove, Charlotte County.	York Point (St. John Harbour), St. John
Mace's Bay, Charlotte County.	County.

## QUEBEC.

Bergeronnes, Chicoutimi County.	River Ashouapmouchouan, Saguenay
Bryson, Pontiac County.	County.
Chambord, Chicoutimi County.	Rivière Ouelle, Kamouraska County.
Escoumains, Chicoutimi County.	Rivière Valin, Saguenay County.
Mille Vaches, Chicoutimi County.	St. Alexis, Chicoutimi County.
Portage du Fort, Pontiac County.	St. Charles Borromée, Chicoutimi County.
Port Neuf, Chicoutimi County.	St. Firmin, Chicoutimi County.
Quebec, Quebec County.	St. Gédéon Islands, Chicoutimi County.

4-5 EDWARD, VII., A. 1905

## ONTARIO.

Barrie, Simcoe County.	Matchadash, Simcoe County.
Bayfield, Huron County.	Matchadash Bay, Simcoe County.
Baysville, Muskoka & Parry Sound County.	McCracken's Landing.
Beaverton, Ontario County.	Midland, Simcoe County.
Belle River, Essex County.	Mitchell's Bay, Kent County.
Blind River, Algoma County.	Morpeth, Kent County.
Burgess Township, Lanark County.	Niagara, Lincoln County.
Burleigh Falls, Ontario County.	Oliphant, Bruce County.
Colchester, Essex County.	Owen Sound, Grey County.
Coldwater, Essex County.	Parry Sound, Muskoka and Parry Sound
Dunnville, Haldimand County.	County.
East River, Muskoka County.	Penetanguishene, Simcoe County.
Echo Bay, Algoma County.	Pike Creek.
Emily River, Victoria County.	Pointe aux Barils, Muskoka and Parry
Etobicoke River, York County.	Sound County.
Fort William, Algoma County.	Port Albert, Huron County.
Gravenhurst, Simcoe County.	Port Credit, Peel County.
Hiawatha, Peterboro County.	River Thames, Middlesex County.
Indian River, Peterboro County.	Rivière aux Puces, Essex County.
Judge's Lake,	Rondeau and Patterson's Creek, Kent
Lake Scugog, Ontario County.	County.
Lakes Simcoe and Couchiching.	Sarnia, Lambton County.
Little Current, Manitoulin County.	Stokes Bay, Bruce County.
Little Bobcaygeon River, Victoria County.	Tenby Bay, Algoma County.
Malden, Essex County.	Washago, Simcoe County.
Manitowaning, Manitoulin County.	Waubausheene, Simcoe County.

## PROVINCE OF NOVA SCOTIA.

## ABBOTT'S HARBOUR.

Abbott's Harbour, some 30 miles from Yarmouth, the county town, is situated on the west side, and near the head of the peninsula forming the western side of Pubnico Harbour. It is about  $2\frac{1}{2}$  miles to the south of Argyle Sound. The harbour is formed by a small island lying about a hundred yards off the mainland. The entrance to the harbour to the south is protected by the island and the mainland, and the northern entrance is protected by a shingle beach, which, under the action of northerly and north-westerly seas, was liable to disappear and leave the harbour without protection. The harbour is the head quarters of numerous fishing fleet, and considerable quantities of cod, herring, lobsters and other fish are annually caught and exported.

In 1900-01, the department at a cost of \$1,200, constructed a piece of cribwork beach protection, 235 feet long, 8 feet wide on top, 10 feet wide on bottom and 8 feet high. It is substantially built of round-log cribwork sheathed on the face with 5-inch sawed stuff, floored with 3-inch plank, well fendered and filled solid with stone ballast. It is admirably serving its purpose in protecting the beach from erosion.

In 1901-02, the department expended the sum of \$1,105 in extending the beach protection work built the previous year, by a new piece of cribwork 180 feet long, 10 feet wide on top, plumb on the seaward side and battering one in four on the inner or land side. On the outer end, where the work is 14 feet high, is an 'L' 20 feet long and 10 feet wide on top. The remainder of the work is from 4 to 14 feet high. It is close-sheathed on the seaward side with 5-inch sawed spruce and covered on top with 3-inch plank.

## SESSIONAL PAPER No. 19

In 1903-04, the sum of \$625.58 was expended in extending the L of the beach protection work built in 1900-01, by a new block 32 feet long, 10 feet wide on top and from 18 to 20 feet high, substantially, built of round-log cribwork, close-sheathed on the seaward face and filled solid with stone ballast.

Spring tides rise 12 feet ; neaps 10 feet.

## ABRAM'S RIVER.

Abram's river, is a small fishing and farming settlement of a couple of hundred people, situated 13 miles east from the town of Yarmouth. In 1903-04, the department expended the sum of \$977.89 (in addition to \$60 for purchase of site and the remains of an ancient cribwork wharf over which the new work is built), in constructing a cribwork and stone wharf. The work consists of a block of substantial cribwork 37 feet long, 12 feet wide and 15 feet high, with a road approach 100 feet long, walled up with stone on either side and filled with earth and gravel.

Spring tides rise about 12 feet, neaps 10 feet.

## AMAGUADUS POND.

Amaguadus pond, Cape Breton county, lies on the northern side of east bay, the eastern arm of the Great Bras d'Or lake ; and is distant about three miles from Benecadie Point, at the entrance to and sixteen miles from the head of the bay.

It is a large sheet of water, about one mile in length and a quarter of a mile in width, with a depth of from 2 to 4 fathoms, separated from the bay by a beach of gravel overlying clay, of from 100 to 200 feet in width, and about 4 feet above the summer level of the lake. The outlet is at the eastern end of the beach, but as it is open only for a short period after freshets, and then is available to small boats only, the pond is not of any practical benefit to the inhabitants.

The sum of \$2,000 was appropriated for expenditure during 1902-03 towards the construction of a wharf. The site was selected on the outside of the beach about 600 feet from its eastern end, and a plan and specification were prepared for a block and span wharf 128 feet in length and 20 feet wide with an 'L' on the eastern side of the outer end, 20 by 20 feet, extending into 11 feet at low water, constructed of round timber, with creosoted timber superstructure, and estimated to cost \$4,000. Out of the amount voted the sum of \$1,999 was expended in procuring nearly all the materials required for the construction of the proposed wharf.

During the fiscal year ended June 30, 1904, the sum of \$3,460.97 was expended in procuring the balance of the materials required and in the construction of the wharf, as intended.

The total expenditure to June 30, 1904 is \$3,950.52.

## ARISAIG.

Arisaig, Antigonish county, is on the northern shore of the Northumberland Strait, about 14 miles to the westward of Cape George.

The pier built by the provincial government, prior to confederation, came under the charge of the federal government in 1870. It consisted of an approach 245 feet in length and of an outer portion, 174 feet in length, varying from 40 to 44 feet in width. The approach is constructed with stone retaining walls, filled in with brush, stone and clay, and the outer portion is of square native timber cribwork, sheathed at the outer faces.

Repairs and improvements were made from time to time, including the construction, during 1889-91, of a squared timber extension, 1,000 feet in length. During 1896, 1897 and 1898 the seaward face of the pier was strengthened and a block, 24 by 24 feet, built of native squared timber, was placed on the seaward side of the outer

4-5 EDWARD VII., A. 1905

end to strengthen the face-work, and to secure and retain a proposed extension of the stone talus, in which some 250 cubic yards of lathe stone were then placed.

In 1898-99, the stone talus along the seaward face of the pier was completed by the deposit of 482 cubic yards of large quarried stone, and some covering and fenders were renewed.

During the severe northwest gale of September 12, 1900, the work was slightly injured, and the sum of \$292.18 was expended in the reconstruction of a portion of the approach, and in repairs and renewals on the outer portion.

The outer end of the work, built by the local government, for a distance of 120 feet, has been in a bad condition for some years. Temporary repairs have been effected from time to time, but as the timber was old and decayed and did not hold the fastenings, it became necessary to reconstruct the work down to low water mark, and towards this purpose the sum of \$900 was appropriated for expenditure during 1902-3. With this amount a section of the old work 49 feet in length, was reconstructed, and the balance of the old work was temporarily repaired.

During the fiscal year 1903-04, the sum of \$2,488.62 was expended in completing the reconstruction of the outer end of the work built by the local government, down to low water, in sheathing its outer face, and in placing additional heavy stone on the talus along the seaward face of the pier.

The depth of water at the outer end of the pier, at low water springs, is 10 feet. Spring tides rise 5 feet.

Total expenditure to June 30, 1904, including refund of \$541.41 to provincial government, is \$38,417.50.

#### BABIN'S COVE.

Babin's Cove, Richmond county, is on the north side of Arichat Harbour, Ile Madame, and nearly opposite its western entrance.

A wharf, intended for winter service, was constructed by the department, under contract, during 1893, 1894 and 1895, and connected with the public road, by a road 410 feet in length. The wharf is 100 feet in length, and consists of a stone abutment, 20 by 20 feet on top, with sides and outer end sloping  $1\frac{1}{2}$  to 1, an inner block, 20 by 20 feet, and an outer block 25 by 40 feet, on top, with openings or spans of  $17\frac{1}{2}$  feet between the blocks, and between the inner block and the stone abutment. The blocks are constructed of round native timber. and the outer faces of the outer block are close-sheathed.

The outer end of the wharf, is 21 feet high, the top is 5 feet above high water springs, and the depth of water at the outer end, at low water, is 11 feet. Spring tides rise 5 feet.

During 1903-4, the sum of \$99.34 was expended in constructing a warehouse on the outer end of the wharf. The building is 16 feet in length, 10 feet in width, and 7 feet in height of post; it has a  $1\frac{1}{2}$ -inch spruce flooring, one door 6 feet wide and a small window at the end, and the roof is covered with cedar shingles.

The total expenditure to June 30, 1904, is \$3,254.15.

#### BAILEY'S BROOK.

Bailey's brook, Lismore, Pictou county, is a large stream emptying into Strait of Northumberland, at a point about ten miles to the eastward of the entrance to Merigomish harbour, and six miles to the westward of Arisaig.

The sum of \$2,000 was voted for expenditure during 1902-3, towards the opening of a permanent channel through the beach at the mouth of the brook, to permit boats to enter it for shelter, and for the construction of channel protection works on the outside.



## SESSIONAL PAPER No. 19

The works proposed to effect the improvements consist in cutting a channel through the beach, about 290 feet in length and 30 feet wide in the bottom, with a depth of 2 feet at low water spring tides, or  $6\frac{1}{2}$  feet at high water; the construction of a shear dam on the western side of the channel, 130 feet in length and 12 feet wide, founded at low water, and protected with sheet piling on the channel face and outer end; and the construction of a breakwater on the Carleton side of the channel, 240 feet in length and 20 feet wide on top, constructed of round timber cribwork and extending out into 3 feet at low water, to prevent the sand from closing in, and to serve at the same time as a boat landing.

The amount voted for expenditure during 1903-04, was expended in procuring most of the timber required for the construction of the protection works.

During the year ended June 30, 1904, out of the amount voted for expenditure, viz., \$3,000, the sum of \$2,742.48 was expended in the construction of the breakwater on the eastern side of the entrance, and in the excavation of the channel above referred to, leaving the construction of the dam still to be done, to complete the proposed improvements.

Total expenditure to June 30, 1904, \$4,742.41.

## BAYFIELD.

Bayfield, Antigonish county, is on the south coast of St. George's bay, eight miles east from Antigonish harbour, and fifteen miles west from the entrance to the Strait of Canso, the harbour being formed by Pomquet island and outlying reefs.

Pomquet island is about three-quarters of a mile long, and is separated from Pomquet Point, on the mainland, by a strait 1,850 feet wide, with a depth of 4 feet at low water in a channel 400 feet wide.

Wharf.—In 1857, the construction of a wharf was commenced by a joint stock company on the west side of the harbour, a quarter of a mile south from Pomquet Point. It was handed over to the provincial government and completed in 1887; it was a block and span structure 402 feet in length, extending to 9 feet at extreme low water. In 1887-88 the two outer and adjoining blocks were raised, repaired and close-piled; the central block and the shore block were cut down to low water; and a continuous work was constructed between the outer blocks and the shore.

By the great gale of December 1, 1890, the work was carried away down to from 6 feet below low water at the outer end, to 3 feet above low water at a point 112 feet from the inner end.

In 1892-93 a contract was entered into for the construction of a new wharf. The work under contract was completed, and the approach to it was improved by one of the departmental dredges, in 1893-94.

The new wharf is 442 feet in length, including 33 feet of rubble masonry, 319 feet of block and span open-faced cribwork 25 feet wide, and 90 feet of close-faced cribwork in two blocks each 60 by 30 feet, placed at right angles. The substructure of the open-faced cribwork and of the outer close-faced cribwork is of creosoted North Carolina yellow pine, and the superstructure of native timber. The depth at extreme low water at the outer end is 11 feet. Spring tides rise 4 feet.

Since its completion, the blocks of both open and close-faced work have settled considerably, principally on the northern side.

In May and June, 1896, the sum of \$348.37 was expended in levelling up 127 feet of the block and span work and in slight repairs to the covering between the outer close-faced blocks.

During the fiscal year 1903-4, the sum of \$3,074.57 was expended in raising and repairing the outer end and in renewing the stringers, covering the cap-timbers over the whole structure.

Breakwater.—A breakwater 400 feet in length was constructed at Pomquet Point in 1879, and extended on a further length of 310 feet in 1888. The work consisted of

4-5 EDWARD VII., A. 1905

a cribwork core 18 feet in average width, covered with stone sloping on the seaward side three to one, and on the inner side one and one-half to one. It continued undisturbed until the occurrence of the great gale of December 1, 1890, when the stone covering was stripped off nearly to high water level, to within 160 feet of the inner end.

During the years 1892-93, and 1895-96, the breakwater was repaired and extended. The work done included an extension 70 feet in length, with an 'L,' or return, at the outer end 40 feet in length.

In the year 1897-98 the sum of \$999.73 was expended in reconstructing the stone covering of the breakwater in places where it had been disturbed. About 4,000 superficial feet of the top was reconstructed with 263 cubic yards of large stone, 163 cubic yards of which was old stone displaced and 200 cubic yards of new stone brought one mile to the public wharf, thence by scow a quarter of a mile to the breakwater.

With the exception of some disturbance of the stone covering and of the displacement of some of the stones forming the covering at the outer end, the breakwater remained in fairly good condition until December 5, 1902, when it sustained serious damage during a northerly gale, accompanied by an exceptionally high tide. The covering stones were carried away for a length of 458 feet (184 to 642 feet from the inner end) down to the top of the cribwork, or to within about  $1\frac{1}{2}$  feet of extreme high water, and deposited over the inner slope; and the covering stones from 726 feet from the inner end, outwards were more or less disturbed. The repairs proposed included the construction of a concrete wall 525 feet in length over the seaward face of the cribwork (150 to 525 feet from the inner end) and the replacing of the stone covering.

During the fiscal year 1903-04, the sum of \$6,789.83 was expended in procuring and storing 800 barrels of cement and some other materials, and in the construction of 30 lineal feet of concrete wall.

#### BENOIT COVE.

Benoit Cove, Antigonish county, is situated on the southern shore of St. George's bay, about two miles to the eastward of Harbour Aux Bouches.

The Cove, so-called, is only a slight depression in the coast line, and is used by the fishermen of the district for a landing; but as the beach between high and low water was strewn with boulders, it was at times dangerous to make a landing with boats, the sum of \$800 was voted for expenditure during 1903-04, for the improvement of the landing by the removal of the boulders.

Out of the amount voted, the sum of \$799.91 was expended in the removal by blasting of some 120 boulders, of from 1 to 3 cubic yards in size, off the beach between high and low water, a distance of about 200 feet, and in constructing with the stone removed, a rough breakwater at the western end of the clean beach, 120 feet in length, and extending out 5 feet at low water.

#### BIG HARBOUR.

Big harbour, or Port Bévis, Victoria county, is on the northern side of the Great Bras d'Or channel, about fifteen miles to the westward of its entrance into the Atlantic.

Plans and specifications for the proposed work were prepared, and on April 28, 1904, a contract for the construction of the wharf was entered into for the sum of \$3,875.

The work under contract is a block and span structure, with creosoted timber substructure, extending into 13 feet at low water, 81 feet in length, measured on the centre line, and 20 feet wide, with an 'L' on the eastern side of the outer end, 20 by 20 feet, and a road approach from the wharf to the public road, 113 feet in length on the centre line. The wharf consists of a shore abutment 11 feet long, of an inner block 20 feet long, and of an outer block 20 by 40 feet, with openings or spans between

## SESSIONAL PAPER No. 19

them 15 feet in length. The blocks are to be constructed of round timber, fully ballasted, protected by fenders on all faces, and with close-sheathing around the outer block.

At the close of the fiscal year the work had not been started.

## BIG POND.

Big Pond, Cape Breton county, is on the south side of East bay, the eastern arm of the Great Bras d'Or lake, about thirteen miles from the head of the bay, and twenty-five miles from the city of Sydney.

Big Pond is so called on account of the existence here of a large sheet of water, separated from the bay by a beach.

During 1874-5, a cut was made through the beach, from the bay into the pond, and its sides protected with cribwork, but there being no large streams discharging into the pond, the slight rise and fall of the tide (about 1 foot) did not produce sufficient scour to keep the opening clear, and it soon filled up with sand.

A block and span wharf, 260 feet in length, was constructed by the department during 1887-88-89, but being constructed entirely with native timber, in a few years it was destroyed by the teredo, the outer end was carried away by ice, and it was decided to abandon it.

In 1899, a report was submitted on the construction of a new wharf. Two sites were examined, and estimates were given for the cost of a wharf on each site; but owing to diversity of opinion among the parties interested as to the proper site, a decision was not arrived at until January, 1903.

On March 27, plans and specifications for the construction of a wharf on the eastern site, were submitted, and on January 12, 1904, a contract was entered into for the same for the sum of \$7,720.

The work under contract consisted in the construction of a block and span wharf, extending into 11 feet at low water, together with a road, 223 feet in length, to connect it with the public road. The wharf to be 254 feet in length and 20 feet wide on top, with an 'L' on the northeastern side of the outer end, 28 feet long and 24 feet wide, and consisting of a shore abutment, 50 feet long, of 4 blocks 20 feet long, and of an outer block 24 by 48 feet, with openings or spans between them 18 feet in length. The abutment and the blocks to be constructed of round timber, with creosoted timber substructure, fully ballasted, fendered, and the faces of the two outer blocks, protected with close-sheathing.

At the close of the fiscal year 1903-04, the work of construction had just been started; but there was not work enough done to give the contractor an estimate.

The wharf and approach thereto were since completed in a satisfactory manner on October 8, 1904. The expenditure, in calling for tenders, &c., was \$154.47.

## BOULARDERIE CENTRE.

Boularderie Centre, Victoria county, is on the southern side of the Great Bras d'Or channel, about eight miles to the westward of its entrance into the Atlantic ocean, and ten miles to the eastward of its entrance into the little Bras d'Or lake.

On April 25, 1901, a contract was entered into for the construction of a wharf which was completed on June 30, 1902.

The wharf is 164 feet in length and 20 feet wide, with an 'L' at the outer end, 20 by 20 feet, and consists of an approach of stone, clay and gravel; 10 feet long, of a cribwork abutment 30 feet long; of two cribwork blocks 20 by 20 feet, and of an outer block 24 by 40 feet, with 20 feet openings between the blocks, spanned and covered. The abutment and the blocks, constructed of round timber, are creosoted up to the level of high water, fully ballasted and fendered, and the two outer blocks are protected by close-sheathing.

4-5 EDWARD VII., A. 1905

The depth at low water along the channel face is 13 feet. Spring tides rise 2 feet.

During the year 1902-03, the sum of \$130.12 was expended in opening a temporary road 2,100 feet in length, from the wharf to the public road. During the fiscal year ended June 30, 1904, the road was completed at a cost of \$669.98.

Total expenditure to June 30, 1904, is \$5,760.56.

## BRETON COVE.

Breton Cove, Victoria county, is situated on the north-eastern shore of the island of Cape Breton, about midway between St. Ann's harbour and Ingonish.

The sum of \$4,600 was voted for expenditure during 1903-04, towards the construction of a wharf to serve the purposes of a boat landing, and to afford shelter to fishing boats.

Plans and specifications for the work proposed were prepared, but the contract for their construction was not entered into until July 18, 1904.

The work under contract is a continuous cribwork structure with creosoted timber substructure, extending to 4 feet at low water spring tides, 194 feet in length and 16 feet wide, on top, with an 'L' on the western side of the outer end, 24 by 20 feet, to top, and an inclined landing, built on creosoted timber piles, 6 feet wide and 46 feet long, off the inner face.

Spring tides rise here 4 feet.

The expenditure incurred in calling for tenders, &c., was \$299.23.

## CARIBOU ISLAND.

Caribou Island, Pictou county, is on the Northumberland Strait, five miles to the westward of the entrance to Pictou harbour.

Caribou harbour, sheltered by Caribou island and a smaller island to the seaward of it, is eight miles in length and one mile in average width. The principal entrance, between the two islands, has a depth of only 4 feet at extreme low water, and the flats between the mainland and the western extremity of Caribou island are dry at extreme low water, except in a few small channels. Spring tides rise 6 feet, neaps 4 feet.

A causeway of brush and stone, 1,330 feet in length and 18 feet in width, between the mainland and the western extremity of the island, commenced in 1890-91, was, after the completion of work undertaken in 1894-95, built up to the level of the ordinary high water over 560 feet of its length, and about 1½ feet below that level over the remaining 770 feet. In 1897 a breach was made through the work near its western extremity, where the bottom was secured to a depth of about 4 feet at low water, and the top of the low portion, 560 to 1,300 feet from the west end, was distributed in some places. In 1900-01 and 1901-02 the breaches in the brush and stonework were filled in and the work raised to about the level of the ordinary high water.

In 1902-03 the sum of \$650.06 was expended in continuing the raising of the brush and stonework which was brought up to an average of about 1½ feet above extreme high water.

During the fiscal year 1903-04 the sum of \$1,552.07 was expended in raising the brush and stonework where settlement had taken place and in placing quarried stone on the seaward side.

The total expenditure to June 30, 1904, is \$5,454.54.

## CHEBOGUE HARBOUR.

Chebogue harbour, is situated about seven miles south of the town of Yarmouth near its mouth, and surrounded by Fox island, Veal island, Jacko island and Short-lift point, is a small but well sheltered anchorage and roadstead, which affords shelter to a considerable number of fishing vessels and other small crafts engaged in fish-

## SESSIONAL PAPER No. 19

ing and general trade. The anchorage is partly protected from the south by Fox island, but its western portion, which is mostly dry at low water, and much used at or near high water by boats plying between Chebogue point and other ports, and by other craft, is guarded by a gravel bar or beach. This beach is some 800 feet long, about 20 feet wide from high water to high water and 4 to 5 feet above high water ordinary spring tides. To preserve the beach, and the anchorage north of it, the department in 1900-01, at a cost of \$1,798.34 built 360 feet in length of beach protection work. The cribwork is  $8\frac{1}{2}$  feet high 8 feet wide on top, plumb on the beach or shoreward side, battering 1 in 4 on the back or harbour side, and substantially built of round-logs, well bolted, fendered, filled with ballast, and covered with 3-inch plank.

In 1901-02, the sum of \$1,311.79 was expended in extending the beach protection work built the previous year. The extension is 243 feet long,  $9\frac{1}{2}$  feet in mean width,  $8\frac{1}{2}$  feet high, strongly built of round-log cribwork, well fendered, filled with ballast and covered with 3-inch plank. The whole work, which is doing excellent service in the protection of the roadstead is now 603 feet in total length.

In 1903-04, the department expended the sum of \$67.77 in finishing, with plank covering and fenders, the outer 80 feet in length of the beach protection work built in 1900-02.

## CHEGGOGIN.

Cheggogin, Yarmouth county is a small fishing and farming village with a population of a couple of hundred people, situated on the Bay of Fundy coast, about five miles north of Yarmouth. The little bay of the same name is one-third of a mile deep north and south, and about the same east and west, fully exposed to the south-west, but sheltered from every other quarter. It is dry at low tide, but at high water has a depth of from 12 to 14 feet.

Over half a century ago a breakwater was built by the proprietors of the marsh, in a position immediately west of the present work. It was totally destroyed about twenty years ago, not a vestige of it being now visible.

In the winter of 1895-6, the inhabitants aided by a grant of \$45 from the municipal council, built a small breakwater 80 feet long  $12\frac{1}{2}$  feet wide, and from 6 to 11 feet high, on the south side of the stream's outlet. In 1899-1900, the sum of \$596.12 was expended in lengthening the breakwater by the addition of a new block 60 feet long, 15 feet wide, and from 10 to 13 feet high. It is cheaply but substantially built of round-log cribwork of the usual type. In 1900-01, the breakwater was further extended a length of 51 feet at a cost of \$692.21. The new block is 11 feet wide on top, with side batters of 1 in 12, and from 12 to 13 feet high. In addition to the examination, a piece of the shoreward end of the work was rebuilt, 30 feet long, 8 feet wide, and from 7 to 9 feet high, at a cost of \$88.03.

In 1902-03, the sum of \$76.58 was expended in raising the shore-end of the breakwater a height of from 2 to 3 feet, for the purpose of preventing the gravel and sand from washing over and filling up the mouth of the stream where the fishermen keep their boats.

In 1903-04 the sum of \$188.67 was expended in the purchase and delivery of timber for the further extension of the breakwater.

Spring tides rise 16 feet, neaps 13 feet. Total expenditure to June 30, 1904, is \$1,643.61.

## CHETICAMP POINT.

Cheticamp Point, Inverness county, is the southern extremity of Cheticamp island, about one mile to the eastward of a beach of shingle closing the south end of Cheticamp harbour, which lies between the island and the mainland, and is entered from the north.

4-5 EDWARD VII., A. 1905

A contract was entered into on July 16, 1903, for the constructin of a wharf, extending to 5 feet at extreme low water, for the sum of \$13,880.

The work according to contract is to be 370 feet in length and 20 feet in width, and to consist of 20 feet of stone embankment, 80 feet of stone abutment, and 270 feet of cribwork with creosoted substructure.

At the close of the year ended June 30, 1904, the approach (embankment and stone abutment) was completed with the exception of the cap-timbers.

The work under contract has since been completed September 23, 1904.

The expenditure during the fiscal year was \$1,223.49.

#### CHEVERIE.

The village of Cheverie, Hants county, with a population of about 350, is situated on the right or east bank of the estuary of the river Avon, where it debouches into the Basin of Minas, some fifteen miles north of Windsor, the county town. It is a good farming district, but the principal trade of the place is the quarrying and shipment of gypsum to the United States.

The quantity, which varies according to the price ruling in the American market, ranges from 20,000 to 60,000 tons per annum. A wharf, about 100 feet long, was built here many years ago by the provincial government. In 1873-74, the Department of Public Works lengthened it 70 feet, at a cost of \$2,338.88; this extension being of open round-log cribwork, like the old work. In 1882, a further extension of 182 feet was built at a cost of \$5,000. This piece of work is of square timber, close-faced, 25 feet high and 25 feet wide on top, the same width as the former, and the sides batter 1 in 12. In 1885, the sum of \$600 was expended in effecting some much-needed repairs to the shoreward side of the wharf. In 1884, the department built a detached breakwater 300 feet distant from the outer end of the wharf for the purpose of protecting the latter from the northerly seas, to which it was exposed. This piece of work consists of solid cribwork, 130 feet long, 20 feet wide on top, 35 feet wide at base and about 23 feet high, built of square timber and close-faced on all sides. The seaward side to the height of 10 feet below high water of spring tides has a slope of one to one, the sloping face being covered with 6-inch plank. The block is provided with mooring posts to assist vessels coming to berth at the wharf, as well as with ring-bolts and ladders.

In 1887-88, the sum of \$500, and in 1896-97, the sum of \$100, was expended in extensive repairs. On the outer 100 feet in length the flooring, guards, and some of the fenders were renewed; on the 80 feet the guards and 3 fenders were renewed; on the next 105 feet the work received new ties, stringers, guards, flooring and fenders; on the next 60 feet shorewards most of the flooring was renewed, 205 feet in length of the wharf included in the above lengths, was raised in height from 1 to 3 feet. In all, 69 new fenders were placed and 250 tons of new ballast was put in.

In the fiscal year ending June 30, 1902, the sum of \$768.23 was expended in the purchase of timber for the extension of the detached breakwater built in 1884, as described above.

In 1902-03, the sum of \$2,999.34 was expended in the construction of an extension to the detached breakwater. The new block is 100 feet long, 23 wide on top, 22 feet high, battering on the landward side 1 in 4, and plumb on the seaward face, with a break 5 feet high. It is substantially built of stone-filled cribwork and close-sheathed on the seaward side.

In 1903-4, the sum of \$1,486.39 was expended in completing the work.

Spring tides rise 40 feet, neaps 36 feet.



## SESSIONAL PAPER No. 19

## CHURCH POINT.

Church Point, Digby county, is situated on the southeast side of St. Mary's Bay, 6 miles southwest from Weymouth. It has a population of 200 people, engaged in fishing and farming.

The works, which consist of a wharf, a retaining wall and breakwater, appear to have been built between the years 1856 and 1866, at the joint expense of the provincial government and the inhabitants, the expenditure of the government having been \$1,055.66.

In 1875-6, the department expended the sum of \$2,000, the inhabitants contributing an equal amount, in repairing the northern face and in building an L, 72 feet long by 20 feet wide at right angles to it, with the object of preventing gravel from working around the outer end. The movement of gravel, which is from south to north, has been always more or less a difficulty and detriment to this port. In 1890-91, the gravel having worked around the outer end of the breakwater and formed a bar across the entrance to the loading berth, projecting at right angles from the outer or north-west corner of the breakwater. The groyne was extended in 1894-95 a further distance of 30 feet, and in 1896-97, it was again extended by a length of 120 feet and width of 16 to 25 feet by a height of 10 to 22 feet, all of round-log cribwork. The sluice gates at the head of the lock, where the fresh stream makes its exit, were rebuilt in order to cause the stream to scour away the gravel from alongside the wharf.

In 1900-01, the sum of \$800 was expended in rebuilding 63 feet in length of the wharf front, 16 feet high and from 10 to 20 feet wide, 35 feet of this length being close-piled. The sluice-way was entirely rebuilt and fitted with double lifting gates instead of single; the floor of the sluice was lowered 5 feet, and an apron extending 13 feet up-stream and 50 feet down-stream, was constructed of 3-inch plank, well spiked to heavy stringers, bedded in close-packed stone, and close-piled at both ends to prevent scour.

In 1902-03 the sum of \$1,800 was expended in rebuilding 134 feet in length of the wharf wall. The new piece is 15 feet wide at bottom, 18 feet wide at top and 20 feet high, solidly built of stone-filled cribwork.

In 1903-04, the sum of \$2,995.21 was expended in the further reconstruction of the wharf wall begun in 1902-03. The length of the work built this year is 158 feet, its height from 19 to 21 feet and its width from 8 to 13 feet.

The total expenditure to June 30, 1904, is \$15,353.02, including a refund of \$1,692 to the provincial government in 1887-88. This work was transferred to the control of the Marine and Fisheries in June, 1888.

Spring tides rise about 22 feet.

## COW BAY.

Cow Bay, Halifax county, is situated at the mouth of Halifax harbour on the Atlantic coast, about two miles east of Devil island. It is a broad bay formed by a narrow strip of beach, about a mile in length, separating the Atlantic from a fresh water lake having an area of about one and a quarter square miles. The outlet of the lake, which is a small brook flowing through the beach, is used by the fishermen of the locality for the purpose of taking their boats into the lake for shelter in stormy weather. The action of the seas have, however, many times caused the outlet to fill up with gravel, flooding the shores of the lake and making access thereto impracticable. A heavy freshet in the early spring of 1902 swept the gravel out of the outlet and enlarged it to greater dimensions than it hitherto had. To maintain the usefulness of this outlet, the department during the fiscal year of 1903-04 expended the sum of \$2,063.94 in the purchase and delivery of timber for the purpose of constructing a substantial breakwater.

4-5 EDWARD VII., A. 1905

## COW BAY (PORT MORIEN).

Cow Bay (Port Morien), Cape Breton county, is on the eastern coast of Cape Breton island, about eighteen miles to the eastward of the entrance to Sydney harbour.

A breakwater, built by the owners of the Gowrie Coal Mine on the north side of the bay, came under the charge of the department in 1873. It originally extended 1,374 feet to 17 feet at low, or to 23 feet at high water, and was about 44 feet in width. The area of the basin inclosed between it and the shipping pier of the Gowrie mines, now the property of the Dominion Coal Company, was 17 acres, 10 acres of which had a depth of from 9 to 17 feet at low water.

The breakwater was seriously damaged during the great gale of August 24, 1873. Extensive repairs and improvements were made nearly every year up to 1895 when the breakwater consisted of 220 feet of old work protected on the seaward side by a beach of shingle and boulders, 360 feet of old work 44 feet in width, with a new inner face work and a break on the seaward side built over the remains of the old work ; and 793 feet of inner work with counterforts connecting outer face works. The inner and outer face works were from 30 to 20 feet apart ; they were connected by tie-walls and the spaces were filled with earth and stone ballast.

In 1895 and 1896, 260 feet of breakwater (1,114 feet from the shore end outward) was carried away down to from 2 to 6½ feet below low water ; the outer face-work from 1,114 feet from the shore end inward were badly damaged, and ballast was washed over the works and deposited in the dock along the inner face from 581 feet to 1,114 feet from the shore end.

Between the years 1897 and 1901 a large amount was expended in repairing and strengthening the breakwater from 1,114 feet from the shore end inward. The outer works were repaired and strengthened by filling in the face chambers to about half tide level with concrete and by close-piling ; the stringers and covering of the inner work from 581 feet to 1,114 feet from the shore end were renewed, and the work of placing a talus of concrete blocks on the seaward side was commenced.

During the year 1902-03 the sum of \$10,005 was expended in repairing and strengthening the breakwater, the new work including the reconstruction of 87 feet of outer face work 24 feet in width and 15 feet in average height, of which the outer face chambers were filled with concrete and the outer face close-piled ; and in the reconstruction, to within one foot four inches of the top, of part of outer end, 49 feet in length, 24 feet in width and 15½ feet in average height, which remained to be completed and to have the outer face chambers filled with concrete and the outer faces close piled.

During the fiscal year 1903-04, the sum of \$21,266.79, was expended in continuing the work of repairing and strengthening the breakwater in progress in 1902-03. The work performed included : the completion of the block 49 x 24 feet at the outer end of outer face works and its extension to form a block 49 feet square of which the outer face chambers are filled with concrete and the outer faces close-piled ; in constructing 218 feet of new face work, 9 feet wide and 11 feet in height, inside of the old outer face work 226 to 444 feet from the inner end, and in filling it with concrete over 109 feet from its outer end inwards ; in reconstructing, filling face chambers with concrete and close-piling 112 feet of outer face work from the inner counterfort (600 feet from the inner end) outwards ; and in levelling up and covering with concrete, the space between the inner and outer works from 600 feet from the inner end outwards.

The total expenditure to June 30, 1904, including \$25,000 for purchase of breakwater, amounted to \$252,877.28.

## D'ESCOUSSE.

D'Escousse, Richmond county, is a thickly settled district on the northeastern coast of Madame island, and on the southern side of the entrance into Lennox Pas-



## SESSIONAL PAPER No. 19

sage, a strait separating the Island of Madame from Cape Breton island, and connecting St. Peter's bay with the Strait of Canso.

The harbour is formed by outlying islands and connecting beaches, the entrance is from the eastward, through a narrow channel, obstructed by a 'bar' with 10 feet at low water. It is about three-quarters of a mile in length and one-third in width, with a depth of about 21 feet at low water spring tides which rise 6 feet.

On March 23, 1903, a contract was entered into, in the sum of \$4,388, for the construction of a public wharf and warehouse. The work of construction was commenced on July 27, and was brought to a satisfactory completion on November 21, 1903.

The wharf is a pile structure, with creosoted timber bearing piles beyond the line of low water, and extends to 12 feet at low water; it is 307 feet in length and 22 feet wide, with an L on the western side of the outer end 22 x 22 feet. The warehouse is constructed on a pile foundation, on the eastern side of the inner end of the wharf and is 30 feet long x 20 feet wide, with 10 foot posts. The sides and roof are boarded, shingled and painted. The floor is laid double, the building has four windows, and a large sliding door.

## DEVIL ISLAND.

Devil Island, Halifax county, is a small low island about 2,000 feet in length by 1,000 wide, with its highest point about 15 feet above high water springs, situated about eight miles to the south-east of the city of Halifax, and one-third of a mile from the mainland off Hartland Point, to which it is connected by a reef, covered with three feet of sand, and having three feet of water over it at low tide. The island is permanently inhabited by about one hundred people, wholly dependent upon fishing for their livelihood.

In 1892, a breakwater 300 feet in length, 15 feet in width, with an L at the outer end, 30 feet in length, at which there is a depth of 5 feet at low water spring tides, was constructed at a cost of \$1,941.18.

In September, 1893, the sum of \$87.96 was expended in close-sheathing 100 feet in length of the western or seaward face of the breakwater, in order to prevent the sea from washing the gravel under the ballast floor and obstructing the berths for boats on the eastern side. The sheathing is of round spars, flatted on three sides, to a thickness of 6 to 8 inches, and well secured to the longitudinal face timbers with iron bolts, three quarters of an inch in diameter.

In 1899-1900, the sum of \$97.13 was expended in petty repairs, rendered necessary by damage done by a severe storm March, 1, 1900. The work done comprised 300 feet b.m. of new planking, about a dozen new fenders, a short piece of new guard timber and thirty tons of ballast.

In 1903-04, the sum of \$252.55, was expended in repairs and improvements. Of this sum \$149.68 was expended in filling the spaces between the face-logs with new pieces of timber, rendered necessary by the eating away of the old timbers by the limnoria. The outer end was also reballasted. The remaining \$100 was expended in building a small wing or break on the western side of the shore end of the breakwater to prevent the gravel from washing in past the shore end of the work; the new block is 35 feet long, 10 feet wide and 7 feet high, well and strongly built of round-log crib-work filled with stone.

Spring tides rise 6 feet, neaps 5 feet.

## DIGBY.

Digby, the shire town of the county of Digby, with a population of about 1,500, is beautifully situated on the south-western end of Annapolis basin. It is an important station on the Dominion Atlantic Railway, sixty-seven miles north of Yarmouth,

4-5 EDWARD VII., A. 1905

one hundred and fifty miles from Halifax, twenty miles from Annapolis, and is also the port of call for the daily steamer of the Dominion Atlantic Railway, plying between Digby and St. John. The harbour is open at all seasons, and well protected from nearly all quarters; storms, however, from the north and north-east drive a heavy sea against the pier, and if at such times there be much drift ice in the basin, the structure is likely to suffer damage.

The first pier was built by the government of Nova Scotia some years before confederation, and was nearly destroyed by the gales which swept the Bay of Fundy in 1866-7. In 1869 to aid in rebuilding the work, the sum of \$2,920 was granted by parliament and transferred to be expended by the provincial government. The pier, as then built, was of pile-work 12 feet apart for 550 feet, next a block of cribwork 80 feet long, 45 feet wide, the southern half of it sloped so as to form an incline rendered necessary by the great rise and fall of the tide (26 feet at spring). The incline was finished by a block 170 feet long by 22 feet wide, the northern half of this portion of the pier being all pile-bents, 8 feet apart. The outer end of the pier consisted of a block 56 feet long, 45 feet wide and about 40 feet high. The whole of the northern face was close-piled, the total length of the structure being 870 feet.

In 1872, the sum of \$1,650 was expended by the department in completing and repairing the pier. In 1874 a number of piles and braces were renewed, the outer block newly fendered, and new joists and plankings laid for the whole length at a cost of \$2,500. During the gale of February 22, 1879, a schooner loaded with produce for the West Indies, parted her cable and was swept bodily through the pier, carrying away a length of 130 feet, which was rebuilt at a cost of \$2,367.73.

In 1881-2, the sum of \$888.57 was expended in repairing a few piles and other timbers that had been eaten away by the limnoria.

In December, 1885, the outer end of the pier was destroyed by a severe gale, and in 1885-6, the sum of \$1,945.62 was expended in repairs.

In 1886-7, a further sum of \$767.62 was spent on the same repairs.

In 1887-8, the sum of \$7,467.68 was expended on the construction of a block, 40 x 40 feet, on the site of the displaced outer block; of an inclined landing 26 feet wide and 8 feet long between the new outer block and the undestroyed inner portion of the pier and the building of a roadway on pile and frame bents, connecting the whole work with the new outer block. In January, 1888, operations were begun towards building the pier to its original length, and the departmental report for the year 1888-9 shows an expenditure of \$4,498.14. The same work consisted of a new block 45 feet by 45 feet to replace the former one. It is built of round timber with double sets of face-logs, and is fully ballasted; it is 45 feet high, and connected with the older portions of the work by a cribwork inclined landing, over the top of which a deck wharf is carried on heavy framed bents. The inclined landing and its superstructure is 25 feet wide. The in-shore or pile-work section was strengthened and repaired in places, and parts of the worn and decayed plankings were renewed. In 1889-90, heavy piles were driven along the northern and southern sides of the centre block, which was shifted and damaged by a storm in December, 1885, to prevent any further movement.

In 1890-1, and again in 1891-2, small expenditures were made in general repairs.

In 1890, a contract was entered into for the construction of a landing pier, on a new site, viz.: on the north side of the 'Racquet,' about a mile to the northward of the present pier, and the town of Digby. For this purpose a quantity of timber and iron had been procured by the contractor. Owing, however, to numerous delays, and the death of the contractor, the intention of building this new pier was abandoned, and it was decided instead to repair and reconstruct the present pier, utilizing, as much as possible, the timber and iron belonging to the estate of the deceased contractor. The work of reconstruction was carried out by days' labour at a cost of \$15,248.15.

## SESSIONAL PAPER No. 19

In April, 1894, a length of 330 feet of close-piling along the north side of the pier, together with the caps and walings for the same distance, and about ninety of the outside bearing and fender piles, were destroyed by a violent gale. In order to save the balance of the structure from the scouring action of the under-tow, set up by the sheet piling, the rest of it was immediately cut out, and the sheet piling and other timber that had been knocked adrift was saved, and piled up on the inner wharf. Subsequently in May and June, 1894, the sum of \$1,410.03 was expended in making good the damage done by the April storm. The sheet piling having proved a mistake, it was not replaced, but about ninety new heavy piles driven and thoroughly braced and bolted.

In 1895-6, the sum of \$4,341.99 was applied in filling with substantial close-piled trestle work, a space or recess on the north side of the pier, near its outer end, 210 feet long by an average width of 17 feet, and in raising from 2 to 3 feet, and renewing the entire floor of the outer 225 feet in length.

In 1896-7 the sum of \$3,132.89 was applied to the reconstruction of the southern half of the shore end of the pier for a length of 450 feet, in substantial pile-work. The new work was covered with 6-inch plank, and securely capped, fendered and braced. In the year 1898-9 the sum of \$579.80 was expended in the renewal and repair of the outer south corner of the pier, which was damaged by being struck by the Dominion Atlantic steamship 'Prince Rupert' during the southeast blow in April, 1899. In addition to this, 40 feet in length of the inclined slip was replanked with 6-inch plank and a couple of new fenders were bolted into position.

In 1900-1, the sum of \$2,000 was expended in necessary renewals. The work done consisted in replanking the wide part of the inclined slip, 125 feet long by 25 feet wide. the narrow part 87 feet long by 17 feet wide, and a portion of the floor of the main wharf 18 by 22 feet, with six-inch spruce deals.

In addition to this, an open shed, 100 feet long by 33 feet 6 inches wide, was erected at the outer end of the present shed and office and over the inclined slip, to protect freight when landed from steamers.

The importance of this pier may be judged by the fact that the collection for wharfage dues now amount to nearly \$3,000 per annum.

In 1901-02, the sum of \$3,300 was expended in repairs and improvements. The old freight shed was moved 100 feet up the pier and raised 4 feet in height. Adjoining it outwardly there was built a new shed 202 feet long, the upper 100 feet in length being built with the floor on a level with a boxcar, and the lower 102 feet level with the floor of the pier. A portion of the pier floor was also renewed. The arrangement is now most satisfactory and convenient for the handling of freight.

In 1902-03, the sum of \$3,697.77 was expended in rebuilding the lower 60 feet in length of the inclined slip. Owing to this portion of the work, which was of crib-work, being very much injured by the limnoria, the new portion was built of pilework, the piles being driven through the ballast cribs. It was difficult and expensive work. In addition to this, a considerable portion of 6-inch plank on the shoreward end of the pier was renewed, and a number of the long hardwood fenders that had been broken by the daily steamer from St. John, were renewed.

In 1903-04, the sum of \$313.15 was expended in renewing the hardwood fenders, building a stairway from the main dock to the inclined slip, and putting new eaves, gutters, down spouts and a few other petty miscellaneous repairs to the freight sheds.

The total expenditure to June 30, 1903, is \$79,586.34, including a refund of \$11,623, to the provincial government in 1887-88, and not including an expenditure of \$4,192.02 in dredging.

Spring tides rise 24 feet, neaps about 20 feet.

This work was transferred to the control of the Department of Marine and Fisheries on June 12, 1888.

4-5 EDWARD VII., A. 1905

## DONALD'S HEAD.

Donald's Head, Shelburne county, is practically a small high tide island, separated from the mainland by a beach one mile in length and from 1,500 to 2,000 feet in width. It is situated about three miles south-west of Stony island and is a very important fishing station on Cape Sable island. The fishing industry at this place consists of twenty-five large boats, seven to ten single-handed boats, twenty-five fish houses, one lobster factory and one boneless-fish establishment.

The island is protected by a cobble stone beach running along its seaward side and by a breakwater situated at its north-west end, which in turn protects a small cove or harbour on the inside of the island, as well as a small creek with several small landings constructed therein.

The breakwater consists of two parts: one, the shore end, 170 feet in length, built by the provincial government at or near the time of confederation, and the other, 90 feet in length, constructed by this department in the fiscal year 1891-92, at a cost of \$2,099.04, and separated from the provincial government work by a gap of 12 feet. The portion of the work built by this department is 18 feet wide, and from 15 to 18 feet high throughout, being built of continuous round-log, stone-filled cribwork, well fastened and fendered.

In the spring of 1899, a breach was made in the beach and three fish houses and two landings were destroyed. Since then, the beach has gradually worn and washed away until the island became almost divided and the destruction of the entire fishing station seemed inevitable.

To effect the necessary repairs to the breakwater and to adequately protect the beach, cove, &c., the sum of \$2,218.54 was expended during the fiscal year 1903-04.

The work performed consisted in filling up the gap in the breakwater, 12 feet long, 18 feet wide and 15 feet deep; renewing the top of the old work, 170 feet in length, 18 feet wide, and 6 feet in height; and constructing three pieces of beach protection, one 120 feet in length, 8 feet wide on top, and 5 feet in height, another 370 feet long, 8 feet wide on top and with an average height of 8 feet, and the third 242 feet in length, 8 feet wide on top and average height of  $4\frac{1}{2}$  feet. The cribwork is of round logs, ballasted to the top with good sized stones, well fendered and fastened. Spring tides rise 10 feet and neap 7 feet.

## DRUM HEAD.

Drum Head, Guysborough county, is on the south or Atlantic coast of Nova Scotia, about 2 miles southeast of the entrance to Isaac's Harbour. A shoal extending in a westerly direction from the 'head' affords partial shelter to a small boat harbour.

A contract was entered into on November 13, 1902, for the construction of a breakwater to extend 350 feet from Drum Head in from  $1\frac{1}{2}$  to 2 feet at low water, for the sum of \$4,685; the work to consist of cribwork 16 feet in width on top, fully ballasted, close-fendered on the seaward side and protected on the seaward side and at the outer end by a talus of stone sloping 3 to 1 from high water. Spring tides rise 5 feet.

At the close of the year ended June 30, 1903, 151 feet of cribwork was in place, of which the inner 80 feet was nearly up to required height, and the outer 71 feet to an average height of  $4\frac{1}{2}$  feet above low water.

During the fiscal year 1903-04, the work under contract was completed, the amount expended during the year was \$4,620.

## EAST BAY.

East Bay, Cape Breton county, is at the head of East Bay, an arm of the Great Bras d'Or Lake.

## SESSIONAL PAPER No. 19

The original wharf at this place was built by the residents, aided by the provincial government; it was a block and span structure 15 feet wide, with a T head 70 feet in length and 18 feet wide. In 1882-83, a block of cribwork 71 feet 6 inches by 22 feet was added at the outer end by the federal government. In 1888-89 and 1891-92 the blocks of the approach were reconstructed and during the latter year the blocks of the original 'T' head were removed and the face and ends of the block built in 1882-83 were close-piled. In 1898-99 the covering, guard rails, floor-stringers and upper longitudinal timbers of the head (71 feet 6 inches by 22 feet) and the covering and floor-stringers of 35 feet of the approach were removed.

The depth along the outer face of the head at ordinary lake level is 11 feet.

In 1901-02, the covering and floor-stringers of the inner 45 feet of the approach were renewed and the roadway leading along the shore to the wharf was repaired.

During the fiscal year 1903-04, the sum of \$263.73 was expended in reconstructing part of the approach to the 'head.' The top was reconstructed, three new blocks were placed between the old ones, which had been destroyed by the teredo.

## EAST BERLIN.

East Berlin, Queen's county, is a small fishing and farming settlement, about 11 miles northeast of Liverpool, and has a population of about 300. During the fiscal year 1902-03, the sum of \$1,999.96 was expended upon the construction of a breakwater 330 feet long, 10 feet wide and 9 feet high, at a point near the centre of a shingle beach 700 feet long, protecting the harbour of East Berlin, which is bare at about half tide. The work consists of continuous, round-log, stone-filled cribwork, well-fendered and ballasted.

During the fiscal year 1903-04, the breakwater was completed by the construction of a further length of 310 feet, at a cost of \$692.93.

Spring tides rise  $6\frac{1}{2}$  feet, neap tides 5 feet.

## EAST JEDDORE.

East Jeddore, Halifax county, is a settlement of about six hundred people, scattered along the eastern side of Jeddore Harbour, about thirty miles east of Halifax, and ten miles west of Ship Harbour. The inhabitants engage chiefly in fishing, the fleet comprising ten schooners and a number of small boats. The harbour is an excellent one with good shelter and easy of approach, the channel being from 20 to 40 feet deep and from 800 to 1,000 feet wide. Hitherto there has been no loading or landing pier in the harbour, and goods shipped by or landed from schooners have had to be transferred to and from the vessels in boats.

In the fiscal year ending June 30, 1904, the department expended the sum of \$1,452.78 (vote \$1,500) in constructing a pile-wharf, 100 feet long, 25 feet wide and with an L on the outer end giving a face length of 40 feet. The height of the work along the outer face is 20 feet, giving a depth of water at low water ordinary spring tides of about 10 feet. \*

Spring tides rise 6 feet, neaps 5 feet.

## ECONOMY.

Economy, Colchester county, is situated on the north side of the Basin of Minas, seventeen miles west of Great Village and twenty-one east of Parrsboro.

A wharf was built here by the department in 1887-88, 208 feet long, and 25 feet wide, at a cost of \$2,500. In the summer of 1890, an extension was built 100 feet long and 25 feet wide with an L 25 feet long on the outer end, at a cost of \$2,500. In the summer of 1891, an extension was built 100 feet long of the same width as the rest of the work, at a cost of \$2,200. In the autumn of 1891, a third extension was built 55

4-5 EDWARD VII., A. 1905

feet in length at a cost of \$1,000. The whole structure was substantially built of round-log cribwork, well ballasted and double fendered. Its average height is about 18 feet and at the outer end, at high water ordinary spring tides, there is about 16 feet of water.

In 1895-96, the sum of \$159.45 was expended in laying new plank flooring for 190 feet in length of the shoreward portion, and putting in some new fenders on the outer block.

Spring tides rise 46 feet, neaps 39 feet.

Owing to the mud-flats in the cove, where the present wharf was built, gradually filling up with mud, this wharf has become almost useless owing to the reduced depth of water to be found at it, and in 1903-04 the sum of \$2,079.11 was expended in building a new pile-wharf at the mouth of the little creek or brook about one-quarter mile east of the old wharf. The new structure is of pile-work; it is 200 feet long, 25 feet wide, with an L on the outer end giving a face length of 45 feet and depth of water at high water ordinary spring tides of 16 feet.

Spring tides rise 48 feet, neaps 42 feet.

#### FINLAY POINT.

Finlay Point, Inverness county, is on the west coast of Cape Breton island, three miles north of the entrance to Mabou Harbour.

In 1902-3, the sum of \$529.78 was expended in procuring all the timber, with the exception of floor-stringers, covering and guard rails, and nearly all the iron required for the construction of a proposed wharf.

During the fiscal year 1903-4, the sum of \$1,466.22 was expended in procuring the balance of materials required and in nearly completing a wharf of crib-work 15 feet in width, on top, extending from low water 146 feet to 3 feet at low water, with an approach of brush and stone 170 feet long. At the end of the year the cribwork was complete, with the exception of the fenders, covering and guard rails over a length of 82 feet from the inner end, the brush and stonework was approaching completion. Spring tides rise 4 feet.

#### FIVE ISLANDS.

The village of Five Islands is situated on the north shore of the Basin of Minas, at the extreme western end of Colchester county, 15 miles east of Parrsboro'. The settlement is some three miles long, and includes that portion of the shore of the basin between East river and Harrington's river, the latter forming the boundary line between Colchester and Cumberland counties. The total population is from 300 to 400 and the exports consist of deals, lumber, cordwood, potatoes and fish. Formerly there was a considerable export trade in barytes, but owing to the low price of this article in the American market, the mines have been closed for the last 15 or 16 years. From 20 to 30 coasting schooners load here annually.

In the year 1884, the department built a public wharf at a cost of \$2,500, at the upper or east end of the settlement, in the mouth of the East river. It is 75 feet long, 40 feet wide and 28 feet high at the outer end, where at high water ordinary spring tides, there is 25 feet of water. The work is of the ordinary type of round-log, stone-filled, cribwork. The sides batter 1 in 12 are double-fendered.

In 1893-94, the sum of \$370.38 was expended in renewing the floor, including stringers and guard timbers, the raising of the outer end about 2 feet and the construction of an inclined ramp in the end of the wharf for the purpose of loading deals on to the decks of schooners lying dry at low water.

In 1903-04, the sum of \$699.97 was expended in renewing the whole top of the wharf, including planking, guards, stringers and fenders. The approach was also re-gravelled.

Spring tides rise 48 feet, neaps 40 feet.



## SESSIONAL PAPER No. 19

## FORT LAWRENCE.

Fort Lawrence, Cumberland county, is situated on the mouth of the La Planche river, and was formerly the proposed terminal of the Chignecto Ship Railway. It is about 3 miles west of the town of Amherst, and is the nearest approach to navigable waters for that town. On June 2, 1903, a contract was let to Messrs. Lyons & White, of Ottawa, for the construction of a wharf at this place, for the sum of \$14,895.

The structure will consist of a section of pile trestle work 300 feet long, 50 feet wide and 43 feet high, along the outer face, to be built parallel to the bank of the river, with an approach, also of pile work, of an average length of 210 feet, 36 feet wide, and of an average height of 26 feet. The available depth along the outer face will be 37 feet at high water ordinary spring tides.

Spring tides rise 45 feet, neaps 33 feet.

At the end of the fiscal year 1903-04, about 120 feet in length of the work had been constructed. The amount expended was \$3,769.25.

## FRIAR'S HEAD.

Friar's Head, Inverness county, is on the west coast of Cape Breton Island, 6 miles to the northward of the entrance to Margaree Harbour.

In 1900-01, the sum of \$494.50 was expended in procuring part of the materials required for the construction of a breakwater, designed to close an opening in a ledge of rock lying parallel to the shore, at a fishing station near Friar's Head, with a view to affording partial shelter to a small wharf and the anchorage for boats. The work proposed included a concrete wall 90 feet in length, 4 feet in width on top, and 8 feet in height, from 1 foot above low water, with a talus of large stone on the seaward side, sloping 2 to 1 from the top of the wall. In 1901-02, the sum of \$1,097.81 was expended in constructing about three-fifths of the concrete wall and one-half the talus, and in procuring part of the cement required to complete the work.

In 1902-03, the sum of \$629.96 was expended in completing the work with the exception of 3 cubic yards of concrete in the west end of the wall, and the talus. The stone obtainable for the talus was too light to withstand the sea. Those placed in 1901-02 were carried away.

During the fiscal year 1903-04, the sum of \$578.96 was expended in extending the concrete wall 13 feet at its west end, and in constructing a wall of concrete 4 feet in height and 4 feet in width on its seaward side, to prevent undermining.

Total expenditure to June 30, 1904, is \$2,801.25.

## FRUID'S POINT.

Fruid's Point, Shelbourne county, is situated on the west side and near the head of Ragged Island bay, about three and a half miles northeast of Lockeport. From Lockeport to Sable river, a distance of about 10 miles, there is a continuous settlement almost without wharf facilities, and to accommodate these people a wharf was constructed here during the fiscal year 1903-4 at a cost of \$4,425.20. It will be much used in the shipment of logs, lumber, farm produce and by the many fishermen of the locality.

It consists of two parts, an approach of stone 105 feet in length, 24 feet wide on top and 8 feet high at its outer end, and an alternate block and span wharf 120 feet in length 20 feet wide, with a height of 18 feet at its outer end. There are 3 spans each 18 feet in the clear, and 3 cribwork blocks each 22 feet in length. The cribs are constructed of round-logs well ballasted and fendered, the floor of the wharf is 4 feet above high water ordinary spring tides.

Spring tides rise here  $7\frac{1}{2}$  feet and neap 5 feet.

4-5 EDWARD VII., A. 1905

## GABARUS.

Gabarus bay, on the Atlantic coast of Cape Breton island, is 5 miles wide at the entrance between White Point and Cape Gabarus, and extends inland 5 miles.

On September 5, 1900, a contract was entered into for the construction of a breakwater at Harbour Point, near the head of the bay. The work under contract was commenced in July, 1901, and completed in January, 1902. The breakwater is 190 feet in length, including an inner section, 70 feet in length and 16 feet in width on top, of round timber laid open-faced and close-fendered on the seaward side; and an outer section 120 feet in length and 24 feet in width, on top of squared timber, close-faced and close-fendered on the seaward side, at the outer end, and on the inner side for a distance of 15 feet. The substructure is of creosoted and the superstructure of native timber. The top of the covering is 5 feet above extreme high water, and the depth at extreme low water at the inner and outer ends of the outer section are respectively, 1 foot and 12½ feet. Spring tides rise 5 feet.

Expenditure in 1901-02 was \$8,259.50.

The sum of \$6,000 was appropriated for expenditure in 1903-4 in extending the work, but no action was taken; it having been found that an additional amount would be required for a proposed extension 125 feet in length.

## GEORGEVILLE.

Georgeville, Antigonish county, is on the southern shore of Northumberland strait, 6½ miles southwest from Cape George.

A wharf was constructed here in 1892-3 to afford the inhabitants shipping and landing facilities. It was 207 feet in length and 20 feet wide, with an L 20 feet by 20 feet, on the eastern side of the outer end; but during 1886-7-8, an extension, 44 feet in length, 40 feet in width, with an 'L' 20 by 24 feet, was added thereto, making a total length of 251 feet, 20 feet wide for a distance of 187 feet, 40 feet wide for a distance of 40 feet, and 60 feet wide for the remaining distance of 24 feet. The inner end of the wharf, for a distance of 87 feet was of stone covered with plank, and the remainder of the work, of square timber cribwork, protected by sheathing and fenders. The depth of water at the outer end, at low water, is 7 feet.

During the severe south-west gales of September 12, 1900, which caused so much damage in the Gulf of St. Lawrence, the woodwork on the stone approach was partly lifted by the sea and removed several feet. The sum of \$291.25 was expended in putting it back into position, but it was shortly after, again disturbed by the sea during a heavy gale.

During 1901-2, the sum of \$699.47 was expended in removing and taking apart the woodwork on the top of the stone approach; the stone wall was taken down to a depth of 4 feet, and in its place cribwork was substituted, fully ballasted and covered with the old plank, and the outer faces of both cribwork and stone wall, were close-sheathed.

The sum of \$2,500 was voted for expenditure during 1903-04, towards the extension of the wharf, 50 feet in length and 25 feet wide, with an 'L' 40 by 25 feet on the western side of the outer end.

A plan and specification for the work was prepared, the necessary materials were procured during the winter and spring, and all was ready to commence construction at the end of the fiscal year.

Out of the amount voted, the sum of \$2,499.70 was expended during the year.

Spring tides rise 4½ feet.

The total expenditure on the work up to June 30, 1904, was \$14,320.15.

## GRAND ETANG.

Grand Etang, Inverness county, is situated on the Gulf of St. Lawrence, about midway between the harbours of Margaree and Cheticamp.



## SESSIONAL PAPER No. 19

The opening of a channel through a beach which separated the waters of the gulf from a large and deep fresh water pond, and the construction of a channel protection work to make the pond available for use and shelter of fishing boats and small vessels, necessitated the diversion of the highway across the pond, 500 feet above the former crossing.

The bridge is 563 feet in length, including the east and west approaches of brush and stone, with cribwork abutments, respectively 94 and 51 feet in length, and 438 feet of pile work. It is provided with a hand rail on each side, and the boat channel through the above is spanned by a drawbridge. The depth at extreme low water over the central 200 feet of the length of the work is about 6 feet, and to firm bottom, through water and soft mud, from 21 to 24 feet. The piles having been weakened by the ravages, of the teredo, temporary repairs were made in 1898-99 and 1899-1900. In 1901-2 the sum of \$2,799.35 was expended in temporary repairs and in procuring all the creosoted piling and part of the native timber required for its reconstruction.

During the year 1902-3, the sum of \$1,020 was laid out in temporary repairs to the old bridge; in procuring the balance of the native timber required; and in constructing a new bridge parallel to and distant 9 feet from the south or inner side of the old bridge.

The appropriation for 1903-4 was made to cover an over-expenditure of \$1,279.78 incurred in 1902-3 in completing the new bridge.

Expenditure during fiscal year 1903-4, \$2,279.78. The total expenditure in connection with works at Grand Etang to June 30, 1904 was :—

On channel and protection works . . . . .	\$23,870 64
On bridge construction, 1895-6. . . . .	3,690 20
On repairs to bridge and on construction of new bridge. .	5,385 08
	<hr/>
	\$32,945 92

## GRAND NARROWS.

Grand Narrows, Cape Breton county, is on the south-eastern side of Barra strait, which connects the Great with the Little Bras d'Or lake. It is an important station on the Intercolonial Railway at the southern end of the railway bridge which spans the strait at this place, and is also a landing place for steamers, which call twice a day with mails and passengers for and from Baddeck, and make connection with the express trains east and west.

The old wharf was 287 feet in length, including 67 feet of cribwork filled with brush and stone and covered with gravel; 80 feet of pile-work built in 1885-86 by the department over the remains of an old landing pier built by the provincial government; and an extension, 140 feet in length built by the department in 1883-84. The extension consisted of three blocks, each 20 by 20 feet, and an outer block or head, 20 feet long and 60 feet wide, with 15 feet openings or spans between each block.

Repairs were made upon the structure from time to time, but owing to natural decay the ravages of the teredo, it fell eventually into a dangerous condition, it was decided to reconstruct it with creosoted timber piling.

During 1902-3, the sum of \$1,300.66 was expended in reconstructing the work with pile-work, to the end of the old work and 10 feet beyond; the work being 297 feet in length, 24 feet wide for a distance of 277 feet and 30 feet wide for the remaining distance of 20 feet; and having a depth, at low water of 11 feet at the outer end.

In order to render the wharf accessible to steamers of a greater draught, the sum of \$2,500 was voted for expenditure during 1903-4, towards the extension of the wharf to 15 feet at low water, a distance of 57½ feet on the centre line, and the construction of an 'L' 30 by 30 feet, on the southern side of the outer end.

Plans and specification for the proposed pile-work were prepared and all necessary materials were obtained, but as the creosoted timber required was not delivered until

4-5 EDWARD VII., A. 1905

the latter part of June, construction could not be commenced by the end of the fiscal year, and out of the amount voted, the sum of \$2,478.79 only, was expended.

The total expenditure on this work, up to June 30, 1904, including a refund of \$1,289.70 paid to the provincial government, is \$11,164.75.

## GRAND RIVER.

Grand River, Richmond county, is a small tidal stream rising in Loch Lomond and emptying into the Atlantic ocean, six miles to the eastward of the entrance of St. Peter's bay. The entrance is obstructed by a bar of sand, over which there is a depth of about 3 feet at extreme low water, and rendered dangerous by several large rocks. Inside, the channel carries 6 feet at extreme low water to within half a mile of a bridge crossing the river three miles inland.

During the fiscal year 1903-04, the sum of \$648.41 was expended out of the appropriation of \$1,000 in improving the entrance. The work was not completed at the end of the fiscal year, but was continued until completion by the removal of a large rock or point of reef on the west side.

## GRANVILLE CENTRE.

Granville, Annapolis county, is a scattered settlement of some 300 people, situated on the right or north bank of the Annapolis river, four miles east of or above Granville Ferry. Both banks of the Annapolis river, from the town of Annapolis to the head of navigation at Bridgetown, a distance of about fifteen miles, are thickly settled by a thrifty, agricultural and fruit-growing population.

In 1901-02, the sum of \$851.02 was expended in constructing a pile-wharf, 90 feet long, 25 feet wide, with an L 25 feet long, giving a face length of 50 feet along the face of the wharf. The wharf is 18 feet high, carrying at high water a depth of 16 feet.

In 1902-03, the sum of \$857 was expended in completing the wharf, in constructing a road approach 900 feet long, and in building a freight shed 26 by 14 feet on the outer end of the wharf.

In 1903-04, the sum of \$199.50 was expended in filling the angle made by the L with the main portion of the wharf, with substantial pile-work, to give more room for teams to turn. The piece of new work is triangular in shape, being one-half a rectangle 50 feet long and 25 feet wide.

Spring tides rise about 27 feet.

## GREEN COVE.

Green Cove, Victoria county, is a small fishing station on the north-eastern coast of Cape Breton island, about midway between North Bay, Ingonish and Neils Harbour, being about five miles north from the former and four miles south from the latter.

The cove is a small indentation in the general coast line, about 400 feet in depth and 900 feet in width, and is protected on the southern end by a reef, and from the eastward by outlying ledges.

During 1889-90, the sum of \$200 was expended by the department in improving the landing beach for boats, at the northern end of the cove, by the removal of bed-rock and boulders.

On February 4, 1903, a contract was entered into for the sum of \$6,475 for the construction of a breakwater extending from the shore to the innermost of the outlying ledges, a distance of 450 feet, but actual work was not commenced during the year 1902-03.

The work under contract was 450 feet in length and 16 feet wide at a height of 2 feet above high water, with sides sloping 3 to 1 on the outer and 2 to 1 on the inner face, and top rounded; the inner 180 feet consisting of quarried stone embankment, and the outer 270 feet of a stone embankment, with cribwork core.

## SESSIONAL PAPER No. 19

Construction was commenced on August 4, 1903, but owing to an extremely stormy autumn, causing considerable damage, and consequent delay, the progress was slow, and up to the end of December, when work had to be suspended for the winter, only about one-half of the work under contract was completed. The work was resumed on the opening of navigation in May, and at the end of the fiscal year it was completed, excepting some slight trimming of the stone slopes, which was finished on July 8, 1904. The expenditure for the year 1903-04 was \$6,432.50.

## HAMPTON.

Hampton, formerly Chute's Cove, Annapolis county, is situated on the south-east side of the Bay of Fundy, twenty-seven miles north-east of Digby Gut and six miles north-west of Bridgetown, an important station on the Dominion Atlantic Railway. It has a population of about 200 people, engaged in fishing, farming, and the export of cordwood and timber.

In 1855 and 1856, a small pier, 165 feet long was built near the western side of the cove, the provincial government contributing \$600 to its cost. The site was chosen by commissioners, apparently without professional advice, and was objectionable on many accounts. At a cost of \$3,000 in 1879, an addition of 121 feet was made by the department, and the older portion of the work was strengthened with the hope of remedying some of the defects of location.

In 1881, on further examination, it was found that the original work had been badly undermined by the sea and that owing to the direction of the pier the shingle was fast shoaling on the inside. It was therefore decided to rebuild the structure on another site about half a mile to the eastward, which was carried out at a cost of \$2,300. The new pier, as then completed, was 246 feet long, more substantially built, and much better located than the old one. It being situated immediately to the westward of a small brook which serves to keep the schooner berth alongside free from sand. In 1888-9, it having been found that the stream had worked under the foundation, endangering the whole structure, the department expended the sum of \$750 in close-piling the inner face, levelling up the top of the work, which had settled in places, putting in some additional ballast, and effecting general repairs to the covering and break.

In February, 1889, during a heavy freshet the brook again gave some trouble, tearing away its banks and the gravel beach, and threatening to undermine the breakwater.

In 1890-91, the department spent \$21 in repairing the damage and in turning the brook into its original channel. In 1892-93, the breakwater being found not quite long enough to give convenient berth to schooners, the department applied the sum of \$1,500 in constructing a block 40 feet long, 27 feet wide on top and 27 feet high on the outer end, and in repairing about 100 feet of the inner end of the old work by raising the inner face, putting in new floor stringers and covering them with new planking, thus putting the work in thorough repair.

In the year 1898-99 the sum of \$1,999.79 was expended in extensive repairs of the breakwater. The whole top of the work for the outer 185 feet in length, 20 to 26 feet in width, was raised with new work for a height of from 2 to 4 feet, rendered necessary by the great and unequal settlement of the work caused by the scouring action of the little stream that discharges alongside and has made its way beneath it. To prevent a repetition of this action, the inside face of the breakwater was protected for a length of 80 feet with a puddle wall, faced on the outer side with 3-inch plank. The breakwater has a total length of 270 feet, a width of from 20 to 26 feet, and a height at the outer end of 24 feet, where at high water ordinary spring tides there is a depth of 21 feet of water.

4-5 EDWARD VII., A. 1905

In 1902-3, the sum of \$207.63 was expended in sheathing with close-piling about 53 feet on the shore end of the east side of the breakwater, to prevent the little stream that issues to the east of the breakwater from undermining the work.

In 1903-4, the sum of \$49.99 was expended in renewing a small quantity of close-sheathing that was torn off by ice during the previous winter.

The total expenditure to June 30, 1904, including a refund to the provincial government of \$1,538.10, is \$11,366.51.

The work was transferred to the control of the Department of Marine and Fisheries on June 12, 1888.

Spring tides rise 32 feet; neaps 28 feet.

#### HARBOURVILLE.

Harbourville, King's county, is situated on the south shore of the Bay of Fundy, fifty-three miles north-east from Digby Gut. The population of the settlement is about 200 people, engaged in fishing and farming, the former being the staple industry. The harbour, which is only 400 feet long by 200 feet wide, and dry at low water, is formed by the mouth of Givan's brook, and affords at high water complete shelter from storms from all quarters to vessels drawing up to 14 feet of water.

The works here consist of two breakwaters or piers, one on either side of the entrance of the harbour. They were built many years ago, before confederation, by the provincial government, when the shipping business of the place was considerably greater than it has been since the opening of the Dominion Atlantic Railway in 1868.

The western breakwater was extended by the department in 1876, at a cost of \$2,000, since which date numerous small expenditures, aggregating up to 1897, to \$7,861.09, have been made in repairs and renewals, to one or other of the piers. Both works are of open-faced round-log cribwork, their outer end being close-sheathed with flatted spars. In the year 1900, general repairs and improvements were made, consisting of the widening of the outer end of the western breakwater to the full width of the rest of the work (45 feet), and its extension one panel length (12 feet), also the extension of the eastern breakwater or wharf by a new piece 80 feet long and 20 feet wide, designed to protect vessels lying at the breakwater.

In 1903-04, the department expended the sum of \$499.71 in general repairs and renewals, the work done consisting of the repair and refilling with ballast of the break of the main breakwater, the renewal of the guard timbers of both the breakwaters and the wharf on the north side and the thorough repair, including new top timbers and cross-ties, of the crib walling around the little inner harbour, in which fishing boats find berth and anchorage.

Spring tides rise about 38 feet.

The total expenditure to June 30, 1904, is \$11,633.72, including a refund of \$323 to the provincial government in 1887-88.

This work was transferred to the control of the Marine and Fisheries on June 12, 1888.

#### HAWK INLET.

Hawk Inlet, Shelburne county, is on the extreme southern end of Cape Sable island and the centre of a very important fishing station. The inlet has never been navigable for even small boats at all tides and during storms fishermen often had to either refrain from going out, or else being out, were unable to get home until after the tide had risen sufficiently to allow the boats to float in. In the fiscal years 1901-02 and 1902-03, the sum of \$700 was expended in making a cut through the flats.

During the fiscal year 1903-4, an additional sum of \$500.04 was expended in widening and deepening the channel and removing about 110 tons of boulders generally  $\frac{1}{2}$  a ton in weight, some of which had to be blasted.

## SESSIONAL PAPER No. 19

The work was done by tide-work under some difficulties, with ploughs and harrows so as to allow the loose sand being carried away by the tides.

The channel is now 1,000 feet in length and 20 feet wide with 3 to 5 feet of water at low water ordinary spring tide, which is sufficient to float small boats at all times of tide and accommodates the larger ones at about  $\frac{1}{2}$  flood. This channel is now used by the fishermen and is of much advantage to them in seeking shelter, and shortening the distance to the fishing grounds by 1 to 2 miles.

## HERRING COVE.

Herring Cove, Halifax county, is a small, narrow and nearly land-locked basin or inlet, situated on the west side of the mouth of the harbour of Halifax,  $5\frac{1}{2}$  miles in a direct line nearly south from the city. Around the cove is a fishing village of about 450 persons, wholly dependent upon fishing. The annual value of the catch is \$100,000. In 1874, the department spent the sum of \$2,400, in dredging a bar of sand and silt that had formed at the entrance of the cove, a little over 12,000 cubic yards of material being removed. In 1894-5, the bar having reformed, the department dredge 'George Mackenzie' dredged 12,915 cubic yards of sand, besides numerous large boulders. On February, 1903, a contract (No. 4599) (\$11,475) was awarded for the construction of a breakwater on the east side of the mouth of the cove. The work is 150 feet long, 35 feet wide on top, and 20 feet high at the outer end, where, at high water ordinary spring tides there is about 16 feet of water. It is substantially built of round-log cribwork, the lower portion up to half tide being of creosoted timber, to resist the ravages of the limnoria.

An additional sum of \$75 was paid to the contractors for treating the upper timbers of the breakwater with carbolineum avenarius.

Spring tides rise 6 feet, neaps 5 feet.

The expenditure for the fiscal year 1903-4 was, \$8,159.

## HORTON LANDING.

Horton Landing, or Lower Horton, is situated at the eastern end of King's county at the mouth of the Gaspereaux river, about midway between Avonport and Wolfville. It is a station on the Dominion Atlantic Railway, and situated in the richest and most fertile agricultural district in the province.

A wharf was built on the left bank, near the mouth of the river, by the provincial government, from 70 to 80 years ago. This structure having fallen into decay and become so dilapidated as to be useless for shipping purposes, was rebuilt by the department in the year 1888-9, at a cost of \$2,252.88. The new structure is built upon the site of the old. It is 172 feet long, 65 feet wide at the outer end and 23 feet 6 inches wide at the inner end. It is of open timber cribwork, well fendered and ballasted and covered with plank. The site is a safe and sheltered one being near the mouth of the river and though the work is dry at low water, owing to the great range of tide, from 40 to 48 feet, vessels drawing 18 feet can reach it at high water.

In 1903-4, the sum of \$70.20 was expended in renewing six mooring posts and a few planks in the floor.

## INDIAN BROOK FLATS.

Indian Brook Flats, Shelburne county, the site on which the wharf at this place is built, consists of a line of flats running from the shore of Cape Sable island into Barrington Passage, and is distant from the village, (often called North East Point) half a mile to the south-west. This wharf not only accommodates the people of the village but also about 300 or 400 other people living from 1 to  $2\frac{1}{2}$  miles therefrom. The occupation of the population is fishing, and they have, hitherto had no facilities

4-5 EDWARD VII., A. 1903

whatever for carrying on their vocation. In order to better their condition in this respect, the department in the fiscal year 1902-3, purchased the only available site for a wharf at this place, on which a small structure already existed, together with the right of way to the public road, and the construction was commenced, the amount expended was \$2,648.81.

During the fiscal year 1903-04 the wharf was completed ; it consists of four distinct sections ; a rock bank approach, 41 feet in length ; a piece of alternate block and span work, 56 feet in length ; a pile-trestle bent stem, 374 feet in length and a pile trestle-bent head, 40 feet in length, making a total length of wharf of 511 feet which carries it from the shore to the channel at the outer edge of the flats. The approach is of the usual rock-bank style, 27 feet wide on top and has a height at the outer end of about 9 feet. The block and span work consists of two blocks of round-log, stone-filled cribwork, each 20 feet long and separated by a clear span of 16 feet in length ; it has a width on top of 18 feet and a height at the outer end of about 10 feet. The stem consists of 34 pile-trestle bents placed 11 feet distant, centre to centre of piles, with a common width of 16 feet, and having a height of 11 feet at the outer end. The head of the wharf is 40 feet in length and 50 feet wide on top, built of 5 pile-trestle bents, well fendered and braced, and has a height of 23 feet at the outer end, standing on the extreme edge of the channel. The expenditure for the fiscal year 1903-4 was, \$672.90.

## IONA.

Iona, Victoria county, is on the northern side of Barra strait, which connects the Great with the Little Bras d'Or lake. It is a station on the Intercolonial Railway, at the northern end of the Grand Narrows Railway bridge, and a landing place for the steamers of the Bras d'Or Steam Navigation Company.

During the winter months, ice and weather permitting, a steamer carrying mails and passengers keeps up daily connection between Baddeck and Iona ; owing to difficulties in opening the draw-bridge during the winter on account of ice and other causes, the steamer could not at all times reach the old wharf on the western side of the bridge, it was therefor decided to construct, on the eastern side of the railway bridge, a wharf extending into 10 feet at low water and connected with railway station by a road 350 feet in length. The work was done during the years 1901-2-3.

The wharf is a block and span structure, 260 feet in length, consisting of six cribwork blocks, with openings or spans between them, 18 feet wide. The three inner blocks are 40, 22 and 22 feet long respectively, and 20 feet wide ; the three outer blocks are 22, 22 and 42 feet in length, and 30 feet wide on top. They are constructed of round timber, laid open-faced, with creosoted timber substructures, fully ballasted, double fendered on the sides and the outer end, and the outer faces of the three outer blocks close-sheathed.

The sum of \$5,000 was voted for expenditure during 1903-4, towards the extension of the wharf. Plan and specification were prepared, and on May 20, 1904, a contract was entered into, in the sum of \$10,230 for its construction, but up to the end of the fiscal year, the work under contract had not been commenced.

On April 22, 1904, the ice forced in by a northerly wind destroyed the outer 30 feet of the superstructure of the outer 42 foot block, leaving the creosoted substructure uninjured. On June 17, 1904, instructions were given to expend the sum of \$1,300 in repairing the damage done, and in placing the wharf in condition to carry trains, but of this amount the sum of \$684.45 only, could be expended by the end of June.

## ISLAND POINT.

Island Point, Victoria county, is on the south side of Boularderie Island, eighteen miles from the bridge crossing the Little Bras d'Or at the head of St. Andrew's channel, an arm of the Bras d'Or lake.



## SESSIONAL PAPER No. 19

A wharf, 120 feet in length, and 20 feet in width, with an 'L' at the outer end, 20 by 21 feet, extending to 21 feet at ordinary lake level, and consisting of blocks and spans, was constructed at this place by the department, during 1886-87.

During 1892-3, the sum of \$499.48 was expended on repairs to the wharf, which had been damaged by ice.

The ravages of the teredo below, and the natural decay of the wood above the water level, caused the work to settle and become dangerous, and the sum of \$550 was appropriated for expenditure in repairs during 1902-3.

When the work was visited to start the repairs, it was found that the inner blocks required to be reconstructed, and that the top of the outer block had been carried away, down to 3 feet below low water, and as the amount voted was entirely too small to reconstruct the whole work, the sum of \$513.37 was expended in reconstructing the inner end, and in procuring a portion of the native timber required to reconstruct the outer block.

The sum of \$1,400 was voted for expenditure during 1903-4, for the reconstruction of the outer block with creosoted timber piling.

Plan and specification for the proposed work were prepared, and the balance of the native timber and the creosoted timber were ordered to be delivered early in the spring, but owing to delay in delivery of the creosoted timber, and the difficulty in procuring a suitable pile-driver, the work had not been started at the end of the fiscal year. The amount expended during the year was \$915.31.

The total expenditure to June 30, 1904, is \$3,881.70.

## JANVRIN'S ISLAND.

Janvrin's island, Richmond county, is a large island to the westward of Madame island from which it is separated by Mousselier's passage.

The sum of \$2,000 was voted for expenditure during 1903-04, towards the construction of a wharf on the island. A plan and specification were prepared for a native timber block and span wharf, 195 feet in length, 16 feet wide, and extending into 8 feet at low water to be built on the northern side of Janvrin's harbour were prepared. The materials required were contracted for to be delivered early in the spring, but they could not be delivered until after the end of the fiscal year, the sum of \$24.20 was expended for salary and expenses of the foreman while making arrangements for the delivery of the materials.

## JUDIQUE.

Judique, Inverness county, is on the east side of St. George's bay, ten miles south of Port Hood, and sixteen miles north from the entrance to the Strait of Canso.

During 1898-99-1900, a breakwater 725 feet in length and 20 feet in width, with an 'L' 20 by 20 feet at the outer end, and extending into 6 feet at low water, was built by the department at McKay's point, for the protection of fishing boats.

The work was constructed of round timber, laid open-faced, with creosoted timber substructure, close-sheathed around the outer end and the 'L,' and protected on the seaward side by a talus of stone.

On September 12, 1900, during a severe north-westerly gale, the work sustained slight damages.

During the year 1902-03, the sum of \$898.77 was expended on repairs and improvements as follows:—The floor stringers and the covering for a distance of 137 feet, where they had been distributed, were replaced; the outer face-chambers for a distance of 550 feet were reballasted, and 407 lineal feet of the cap-timber were renewed.

During the year ended June 30, 1904, the sum of \$398.48, was expended in completing the improvements, by close-sheathing, the seaward face, for a distance of 400 feet.

Total expenditure to June 30, 1904, is \$21,204.36.

4-5 EDWARD VII., A. 1905

## KINGSPORT.

Kingsport, King's county, formerly known as Oak Point, is a village of some 500 people, on the south-west side of the basin of Minas, between the mouth of the Cornwallis river and Cape Blomidon. It is the terminus of the Cornwallis Valley Railway (opened December, 1890, and now a branch of the Dominion Atlantic Railway), running to Kentville, the county town, fourteen miles to the south. A pier, 445 feet in length, built of piles, already stood here when the harbour was taken in charge by the Department of Public Works. In 1873-74, the department built cribwork 12 feet wide on the eastern or exposed side of the wharf for the purpose of breaking the force of the sea. In 1875, the work was extended a length of 240 feet, by a width of 30 feet, in order to increase the sheltered area, and afford earlier access to the roadstead in lee of the pier, which, owing to the great range of tide, was dry between half ebb and half flood. In subsequent years repairs were several times made. In December, 1890, the Cornwallis Valley Railway was opened for public traffic, and about the same time the wharf, which forms the terminus of the railway, and on which is a track, was leased by the department, to the railway company.

During the fiscal year 1901-02 the sum of \$9,276.72 was expended in rebuilding the upper half of the outer block of solid cribwork, 270 feet long, which was built in 1875. A widening or re-enforcing block 10 feet wide was also built on the north side for the whole length of this outer portion.

In 1902-03 the sum of \$4,934.60 was expended in continuing the repairs and renewals to the works begun the previous year. The outer 130 feet in length of the pier was taken down to a height of 15 feet and rebuilt in substantial cribwork. On the north side of the pier for its whole length of 700 feet re-enforcing block, 10 feet wide was partly built.

In 1903-04, the sum of \$5,052.61 was expended in continuing the repairs and renewals carried on during the previous few years. The work done consists in the completion of the 10-foot re-enforcing block on the north side, the thorough renewal of 130 feet in length of the pile work portion of the shore end of the pier and the repair of the next 100 feet shorewards, which is of cribwork and earth and stone filling.

Spring tides rise 48 feet, neaps 40 feet.

The total expenditure by the department up to June 30, 1904, including a refund to the provincial government of \$1,738.14 in 1887-88, is \$46,931.90.

## L'ARDOISE.

L'Ardoise, Richmond county, is situated on the eastern side of St. Peter's bay, near its entrance from the Atlantic ocean, and about nine miles east from the southern entrance to St. Peter's canal.

An isolated breakwater, built in 1876-77, off Martin's Point, in from 5 to 10 feet at low water, and almost destroyed in 1883, was reconstructed during 1891-92-93.

The work consists of a timber core, 400 feet long and 20 feet wide, placed over the remains of the original structure, in from 1 to 4½ feet at low water, its top standing 1 foot above high water, the whole being covered with stone, sloping 3 to 1 on the seaward side and outer end and 2 to 1 on the inner side and inner end. The whole surface of the work, above low water mark, was covered with stone of not less than 15 cubic feet each, and the spaces between these stones, above the line of high water, were filled in with concrete.

Since the completion of the work, the covering stone on the seaward and outer end slopes, which had been disturbed by the sea, have been replaced, and a concrete wall, 3 feet wide on top and 4½ feet in height, with a top flush with the surface of the covering, has been constructed over the outer face and the ends of the cribwork core.

The breakwater averages 17½ feet in height from the original bottom up to the top of the stone covering, which is 5 feet above high water, and 10 feet above low water springs.



## SESSIONAL PAPER No. 19

In order to stop the undertow from sweeping into the harbour through the gap, between the inner end of the breakwater and the shore to the eastward of it, a distance of about 1,200 feet, it was decided to close the gap by cribwork.

A plan and specification for the proposed work were prepared, and the contract for its construction, was entered into on December 29, 1903, in the sum of \$24,820.

Owing to the delay in the delivery of the timber required, the work of construction had not been commenced by the end of the fiscal year.

The work under contract consists of a cribwork breakwater 1,145 feet in length, and of a stone embankment 50 feet long. The cribwork for a distance of 350 feet from the outer end is to be 20 feet wide on top and protected by a stone talus on each side, and for a distance of 795 feet it is to be 16 feet wide on top and protected by a stone talus on the seaward side. The stone embankment is between the outer end of the cribwork and the old breakwater, and is to be constructed with large quarried stone, sloping 3 to 1 on the outer, and 2 to 1 on the inner side.

The expenditure incurred in calling for tenders, &c., was \$104.27.

## LARRY'S RIVER.

Larry's River, Guysborough county, is at the western extremity of Tor bay, on the southern or Atlantic coast of Nova Scotia, 24 miles to the westward of Canso harbour.

The harbour, a channel through mud flats improved by dredging, was formerly protected from the eastward by a beach and bar of shingle. Since 1896 the point of the beach at the northern extremity of the bar and the bar itself have been lowered and carried inward toward the channel.

In order to restore the shelter formerly afforded by the beach and bar, a contract was entered into on September 22, 1902, for the construction of a breakwater, for the sum of \$15,840.

The work under contract consists of two sections of stone embankment, respectively 125 and 379 feet in length, each 14 feet in width at the level of 2 feet above high water and 6 feet in average height, and a central section of cribwork 500 feet in length, 14 feet in width on top and 11½ feet in average height, protected on the seaward side by close-fendering and by a talus of stone sloping 2 to 1 from high water. The embankment and cribwork to be finished at a height of 4 feet above extreme high water. Spring tides rise 6½ feet.

In 1902-03, very little work was performed, operations not having been commenced till June 22. The amount expended on the work performed up to June 30, 1903, was \$749.81.

During the fiscal year 1903-04, the work under contract was completed with the exception of placing 350 cubic yards of stone in the talus. The expenditure for the year 1903-04 was \$13,627.50.

The work was completed in a satisfactory manner on July 16, 1904.

## LINGAN.

Lingan, or Bridgeport harbour, Cape Breton county, is at the head of Indian bay on the northeast coast of Cape Breton island, about 5 miles to the eastward of the entrance to Sydney harbour. A large pond or basin, having a depth of 8 feet at low or 12 feet at high water, is separated from Indian bay by a beach of sand. The entrance, which forms the harbour, was deepened and straightened by dredging in 1878-80 to improve the facilities for shipping coal from the Lingan mines, since abandoned. It is now crossed by a bridge built by the provincial government for the accommodation of traffic over the beach between Lingan and Bridgeport.

A work of brush and stone 1,900 feet in length, constructed in 1876-8, afforded an efficient protection to the beach up to 1893, but has since been carried away in places over distances aggregating 1,400 feet.

4-5 EDWARD VII., A. 1905

In 1901-2 the sum of \$1,999.60 was expended in constructing 1,000 feet of brush and stone work, 14 feet in width and  $4\frac{1}{2}$  feet in average height; leaving 1,370 feet 17 feet in width and 3 feet in average height, to be constructed to complete the work undertaken.

In 1902-3 the sum of \$599.89 was expended in constructing 500 feet of brush and stone work.

During the fiscal year 1903-4 the sum of \$998.05 was expended in extending the beach protection work 480 feet or to within 350 feet of the entrance, and in constructing a cross-wall of brush and stone 300 feet in length between it and the south end of the bridge.

## LITTLE HARBOUR.

Little Harbour (Arnold's Point), Shelburne county, is situated on the southeasterly extremity of Black Point, about five miles of Lockeport. It has a population of about 250 people, chiefly engaged in fishing operations. The fishermen have no protection for their boats and lose many valuable craft for want of shelter.

At its session of 1902, parliament made an appropriation of \$1,700 for the construction of a breakwater wharf, 280 feet long, for the protection of this harbour, but the work could not be carried on in 1902-3, owing to the difficulty of procuring timber, the sum of \$138.68 only was expended.

During the fiscal year 1903-4, the sum of \$2,013.49 was expended on this work, but the structure was not completed. When completed the breakwater will have a length of 280 feet, composed of 73 feet of rock-bank approach, 24 feet wide, and 207 feet of continuous cribwork 20 feet wide and 14 feet high at the outer end.

Spring tides rise here  $6\frac{1}{2}$  feet, neap 5 feet.

## LIVINGSTONE'S COVE.

Livingstone's Cove, Antigonish county, is on the southeastern shore of Northumberland strait, about two miles south-west from Cape George.

For the purpose of affording shelter to the fishing boats of the district, and a landing place for steamers and small vessels, a breakwater was commenced by the department in 1899, and completed in September, 1902.

The work extends out into 9 feet at low water spring tides, it is 312 feet in length and is approached by a road cut through the clay bank, 105 feet in length. The breakwater is a continuous structure, and consists of a shore abutment with stone retaining walls, 30 feet long and 18 feet wide, on top of a cribwork block 80 feet long and 18 feet wide, and of a cribwork extension 202 feet in length and 24 feet wide with an 'L' on the southern side of the outer end, 24 by 24 feet. The cribwork is constructed with native squared timber, laid with 7-inch openings, it is fully ballasted and fendered, and the northern, or seaward face, the outer end and the southern face of the 'L' are sheathed with hardwood.

It having been found that the teredo was attacking the work, principally on the seaward face, during the fiscal year ended June 30, 1904, the sum of \$1,800 was expended in placing a heavy stone talus along its seaward face, extending from high water mark on the work with a slope of about 3 to 1.

Spring tides rise  $4\frac{1}{2}$  feet.

The total expenditure to June 30, 1904, is \$15,856.60.

## LOCKEPORT.

Lockeport, Shelburne county, is situated on the Atlantic coast, about fourteen miles south-east of Shelburne, and has a population of about 800. It has been and is one of the most important centres of the fishing industry.

## SESSIONAL PAPER No. 19

During the years 1899-1900 and 1900-1901, the sum of \$3,944.64 was expended in the construction of a breakwater. In 1902-3, the sum of \$299.64 was expended in repairs of this work.

During the fiscal year 1903-4, the sum of \$225.56 was expended in extending the works a further distance of 520 feet, consisting in the construction of a double row of posts driven into the sand 5 feet, planked on the outside with 2-inch planks and on the inside with 1-inch boards, the whole securely fastened. The rows of posts are driven, in a line parallel with the general line of the beach, 8 feet apart both longitudinally and laterally, and the space between them is filled in with sand. The work is in the shape of a crescent and particular care towards obtaining regularity of shape was taken.

## LOWER WASHABUCK.

Lower Washabuck, Victoria county, is on the southern side of the eastern end of St. Patrick's channel, an arm of the Little Bras d'Or lake.

Crow Point is a small island, connected with the mainland by a gravel and shingle beach, about 900 feet in length and from 20 to 50 feet wide at high water, forming a snug little boat harbour inside.

As this beach was being wasted by the sea during easterly gales, and it was feared that it would eventually be cut through and destroy the harbour inside, it became necessary to protect it. During the year ended June 30, 1904, the lowest and narrowest portion of the beach, for a distance of 200 feet, was raised to a height of 3 feet above high lake level, by the construction of round timber cribwork, well bedded into the beach and fully ballasted, at a cost of \$399.81.

## LOWER WEST PUBNICO.

Lower West Pubnico, Yarmouth county, is a thrifty and thickly populated district, situated on the west side of Pubnico Harbour, from 30 to 35 miles south-east from Yarmouth. The people are engaged in fishing and farming.

In 1902-3, the sum of \$1,000 was expended in rebuilding and converting into a public wharf an ancient cribwork wharf situated on the lower or southern end of the district. The outer 120 feet in length of the old work was substantially built in pile-work; it is 25 feet wide and from 8 to 14 feet high. At the outer end there is about 11 feet of water at high water ordinary spring tides.

In 1903-4, the sum of \$895.62 was expended in building the middle portion of the wharf of which the reconstruction was begun in 1902-3. The piece of work built was 65 feet long, 30 feet wide and from 9 to 13 feet high. The stone approach from the shore end, a length of about 75 feet, was also raised from 1 to 3 feet and walled up with stone on the south side.

Spring tides rise about 12 feet.

## MAIN-A-DIEU.

Main-a-Dieu, Cape Breton county, is a small harbour on the eastern coast of Cape Breton island, 10 miles north from Louisburg.

A breakwater 230 feet in length was built on the east side of the harbour in 1881-2. It consists of a cribwork core fully ballasted and covered with stone, sloping on the seaward side and at the outer end 3 to 1, and on the inner side 2 to 1.

During the year 1902-3, a plan and specification were submitted and tenders were invited for the construction of a breakwater on the west side of the harbour designed to stop the under-tow and thus make the anchorage safer.

The breakwater proposed is to extend 320 feet in from 6 inches to 2½ feet at extreme low water. It is to be of cribwork, 14 feet in width on top fully ballasted, 19—iv—3½

4-5 EDWARD VII., A. 1905

the seaward side to be close fendered and protected by talus of stone sloping 3 to 1 from high water. Spring tides rise 5 feet.

Up to June 30, 1904, a contract had not been entered into. The delay being due to difficulty in obtaining a title to the land required for the site of the proposed work, and for right of way thereto.

## MALAGAWATCHIT.

Malagawatcht harbour, Inverness county, is situated on the western side of the entrance to West bay, an arm of the Great Bras d'Or lake.

During the fiscal year 1903-4 the sum of \$299.99 was expended in opening a channel for boats between the head of Malagawatcht harbour and River Denis Basin, over flats originally dry, and in constructing on each side, at the south end a protection work of brush and stone and cribwork, 100 feet in length. The new channel is 1,000 feet in length, 12 feet in width and from 1 to 1½ feet in depth at ordinary lake level.

## MALIGNANT COVE.

Malignant Cove, Antigonish county, is situated on the southeastern shore of Northumberland strait, about midway between Arisaig and Georgeville, and distant about 4 miles from each.

The sum of \$5,000 was voted for expenditure during 1899-1900, towards opening a channel for boats through the gravel beach into a small pond at the head of the cove and for the construction of channel protection works. A plan and specification for works extending outward to 7 feet at low water spring tides were prepared, and the sum of \$3,893.35 was expended during the year in procuring the materials required for the construction of the proposed works.

The work proposed included the construction of piers, placed 60 feet apart, on either side of the channel which was to be excavated to a width of 30 feet in the bottom, and to a depth of 2 feet below low water. The piers extending 248 feet inwards through the beach, from low water outside, to be 10 feet wide on top, and founded at low water; those extending from low water outwards to be 16 feet wide for a distance of 60 feet, and 22 feet wide for a distance of 30 feet. All cribwork was to be built of round native timber laid open-faced, fully ballasted, and close-sheathed at the end and on the channel faces, the sheathing on the channel faces of the work through the beach to be driven into the beach to a depth of 4 feet below low water mark.

In 1900-01, the sum of \$6,123.64 was expended in the construction of the outer piers, each 90 feet in length, and of a portion of the inner pier on the eastern side of the channel 188 feet in length.

During 1901-02 the work proposed was completed, and a cribwork extension to the western inner pier, 60 feet long and 10 feet wide, was constructed to prevent the re-opening of the old channel through the beach, the expenditure incurred amounted to \$2,464.85.

In the year 1902-03 the inner end of the western pier, which for a distance of 70 feet was built lower than the outer portion was raised to the same level, a height of 2 feet and planked over; and beach protection works consisting of a cribwork block 40 feet long, 12 feet wide and averaging 10 feet in height, and an extension of piles, brush and stone 50 feet long were constructed on the eastern side of the eastern pier, to prevent the sea from washing over the beach and carrying sand into the channel between the piers. The amount expended during the year was \$799.94.

During the fiscal year ended June 30, 1904, the sum of \$1,099.07 was expended in close-piling the outer ends of the piers, and their faces for a distance of 20 feet from the end with hardwood piling; in replacing ballast washed out of the ends of the

## SESSIONAL PAPER No. 19

piers ; in extending the beach protection work on the eastern side of the eastern pier for a distance of 40 feet with cribwork ; and in procuring materials for extending the beach protection a further length of 90 feet.

Total expenditure to June 30, 1904, is \$14,380.85.

## MARGAREE.

Margaree harbour, at the mouth of the Margaree river, Inverness county, is on the west coast of Cape Breton island, about thirty miles north-east of Port Hood. It has a narrow intricate channel through which the tide runs at the rate of four knots, and its entrance is obstructed by a bar of shifting sand, over which there is, at time, a depth of only 5 feet at extreme low water.

Expenditures have been made by the department in the construction and maintenance of channel protection and improvement works on the west side of the entrance, and in the construction of beach protection work on the east side.

The works on the west side include works built by the provincial government and extended by the department, and works of improvement undertaken in 1900-01.

The old provincial government works (reconstructed by the department) extended 400 feet from the shore, across what was originally a false channel, to a large rock opposite the inner entrance and thence, at right angles, to the edge of the channel.

The work built by the department extends from the north side of the outer provincial government works outwards, along the west side of the channel 595 feet. It is in four sections : 85 feet (built in 1876), 130 feet (built in 1879), 200 feet (built in 1890) and 180 feet (built in 1899), respectively, 18, 16, 18 and 20 feet in width on top, and 15, 14, 12 and 16 feet in height. Each section is of round timber, open-faced and is fully ballasted and close-fendered at the sides and outer ends. The top of the covering is from 4 feet 4 inches to 5 feet above extreme high water. The depth, at extreme low water, along the channel face, originally varied from 7 to  $2\frac{1}{2}$  feet. Spring tides rise 4 feet.

The improvements undertaken in 1900-01, but not completed, were the deepening along the channel face of the extension to 8 feet at low water over a distance of 200 feet ; and the construction of a shear-dam within the entrance, 180 feet in length, including 25 feet of brush and stonework 11 feet wide on top, 100 feet of pile and brush work 10 feet wide, and 55 feet of cribwork 22 feet wide founded on brush work in from 1 foot 3 inches to 9 feet 9 inches at extreme low water. During the year 1900-01, the sum of \$3,695.30 was expended, \$400 in repairing the channel face of the outer provincial government work ; \$1,796 in procuring materials and constructing the brush and stone work, the pile and brush work, and the substructure of the cribwork of the shear-dam, and \$1,499.30 in about one-half of the rock excavation required to give 8 feet at low water along the channel face of the extension.

In 1901-02 the sum of \$3,065.57 was expended, \$995.78 in completing the shear-dam with the exception of making a roadway over the brush and stone at the inner end, and \$2,069.79 in completing the submarine rock excavation with the exception of the removal of a small quantity of excavated material at the inner end of the cutting, and of some points of ledge rock over which there is a depth of only 6 feet 9 inches at extreme low water.

Of the \$500 appropriated for 1902-03 the sum of \$482.32 was expended : \$219.41 in completing the shear-dam ; \$61.82 in continuing the channel-face rock excavation ; and \$201.09 in repairing and improving the channel protection works.

During the fiscal year 1903-4, the sum of \$799.94 was expended in continuing the channel face rock excavation undertaken in 1900-1901.

The total expenditure to June 30, 1904, including \$3,378 expended in beach protection works (east side) and a refund of \$274.87 to the provincial government, is \$28,827.70.

4-5 EDWARD VII., A. 1905

## MARGARETVILLE.

Margaretville, Annapolis county, is the most important village on the south coast of the Bay of Fundy, between Digby Gut and Scott's Bay; it is forty-two miles north-east from the former, thirty-six miles south-west from the latter, and eight miles north from Middleton, an important station on the Dominion Atlantic Railway. It has a population of about 500 engaged in fishing and farming.

A pier was begun in 1837 by the provincial government, and subsequently extended to a length of 471 feet. The work was taken over by the Public Works Department in 1871, since which time it has had frequent renewals and repairs. In December, 1885, the pier was severely damaged by a storm, a breach nearly 150 feet long being made clear through it, besides receiving other injuries. The Margaretville Pier Company transferred their title to the pier to the government on August 3, 1886. In 1886-1887, the above described damage was made good. In October, 1890, a severe gale made a breach of 117 feet in the outer portion of the work, besides doing other damage. In March, 1894, the remaining block, 86 feet in length, seawards from the 117 feet gap, was totally destroyed. In 1897-99, the outer block was rebuilt. This new block, which is substantially built of round log cribwork, close-sheathed on the seaward face and outer end, is 185 feet long, 42 feet wide and from 22 to 32 feet high. In 1900-1, the sum of \$500 was expended in renewing the floor on the shoreward end of the work and other repairs.

In 1901-2, the sum of \$1,560.50 was expended in sheathing the seaward face of the breakwater for a length of 155 feet on the shore end, in removing gravel from the eastern or land side to improve the schooner berth, and in constructing a new breakwater 250 feet to the eastward of the main work. The new breakwater is 110 feet long, 16 feet wide, 7 feet high at the shore end, 25 feet wide and 16½ feet high at the outer end. The work is substantially built of round-log cribwork, well fendered, bolted and filled with ballast.

Spring tides rise about 30 feet. In 1903-04, the sum of \$510.72 was expended in rebuilding a short piece on the shore end of the breakwater, 14 feet long, 25 feet wide and 8 feet high. Also in constructing a small inner block on the east side of the shore end, 22 feet long, 7 feet wide and 8 feet high. A few petty and miscellaneous repairs were also made to the flooring of the breakwater.

## MCKAY'S POINT.

McKay's Point, Victoria county, is on the western side of the entrance into St. Patrick's channel, an arm of the Little Bras d'Or lake, and about 2½ miles by water, from Baddeck, the shiretown of the county.

The steamer 'Blue Hill,' carrying mails, freight and passengers makes, during the season of navigation, two return trips daily between Baddeck and Iona Station on the Intercolonial Railway, and as McKay's Point is on her course, in order to place the inhabitants of the district in direct communication with those places, on April 30, 1904, a contract was entered into, in the sum of \$5,442, for the construction of a wharf extending to 12 feet at low water; but owing to delay in the delivery of the creosoted timber required, work was not commenced by the end of the fiscal year.

The work under contract is a block and span structure, 206 feet in length and 20 feet wide, with an 'L' on the western side of the outer end 20 by 20 feet; and is composed of a shore abutment 28 feet long; of four cribwork blocks, 17 feet long, and of an outer block 20 by 40 feet, with openings or spans between them, 18 feet in length. The blocks are to be constructed of round timber, laid open-faced and creosoted to high water, fully ballasted and fendered, and the outer faces of the outer block are to be close-sheathed with hardwood as a protection against ice. The expenditure incurred in calling for tenders, &c., was \$191.15.



## SESSIONAL PAPER No. 19

## MCNAIR'S COVE.

McNair's Cove, Antigonish county, is on the west side of St. George's bay, about 2 miles to the southward of Cape George.

A breakwater 400 feet in length and 20 feet in width was built on the north side of the cove during 1872-73-74, and in 1878 a length of 20 feet was added thereto. In 1879 the work was carried away by drift ice to within 100 feet of the shore end, down to from 3 to 6 feet below low water. During the summer of 1883, 70 feet of the shore end was rebuilt, and during the winter of 1884 the work was extended 94 feet. In April, 1884, the 94 foot extension was badly damaged by drift ice, and was subsequently carried away.

During 1886-87-88, the bottom of the damaged work was dredged out, and a work 160 feet in length, 34 feet wide on top, with a sloping face on the seaward side, was constructed and on its completion the total length of the breakwater was 330 feet.

The work was constructed entirely of native timber, and as it became much weakened by the action of the teredo, during 1890-91-92-93-94, the outer end, and on each side of it for a distance of 20 feet, was protected by creosoted timber close-piling, and its seaward face, by talus of quarried stone.

During the years from 1897 to 1901, the timber wall under the sloping face, which was destroyed by the teredo, was renewed down to low water and close-sheathed with hardwood timber, the stone talus was raised up to the top of the close-sheathed, and the work was ballasted and re-covered where necessary. Further the mouth of a small brook, at the head of the cove, which was continually shifting to the detriment of the boat landing, was made permanent by the construction of a shear-dam of brush and stone.

During 1901-2, the sum of \$1,197.17 was expended in placing 80 cubic yards of very large stone on the talus, and in procuring the materials required for the widening and renewing of the top of the inner end of the work, which was built in 1872 and which was only 20 feet wide.

In the year 1902-3, the amount of \$1,094.58, was expended in reconstructing the top of the inner end of the work, and in widening it to 30 feet for a distance of 120 feet, the materials for which were obtained in the previous year; and in placing about 85 cubic yards of large stone on the talus along the seaward face of the work.

The sum of \$6,000, was voted for expenditure during 1903-4, towards the construction of a new end and 'L' with creosoted timber substructure, 32 feet wide and 80 feet in length, but owing to delay in the delivery of the creosoted timber, up to June 30, 1904, the work of construction had not been commenced. Out of the amount voted, the sum of \$4,768.13 was expended for materials.

Spring tides rise 4 feet.

Total expenditure up to June 30, 1904, is \$73,095.04.

## MCNUTT'S ISLAND.

McNutt's Island, Shelburne county, is about three miles long with an average width of one mile, situated at the mouth of Shelburne harbour. On the north side of the island, and about six miles south by west from the town of Shelburne, lies the Horseshoe beach, so called, which protects the only place of shelter in Shelburne harbour, during southerly gales. This beach was broken through so badly by the seas that its complete demolition was a question of but a few years.

In order to prevent the destruction of this shelter, the department, in the fiscal year 1898-99, constructed a cribwork beach protection along the outer side of the beach. This protection stood very well, but was not long enough, as the beach washed away at its northern end and undermined the works.

4-5 EDWARD VII., A. 1905

During the fiscal year 1903-04 the sum of \$489.28 was expended in repairing this work and extending same. The old work was 265 feet in length, 9 feet wide on top and had an average height of 9½ feet. The northern end was rebuilt on a length of 40 feet, on a height of 10 feet, and a further length of 100 feet was constructed. The width of the new work averages 9 feet and the height 10 feet. The whole work is constructed of round-log, stone-filled cribwork, well ballasted and fendered. The work was covered with 4-inch poles to secure the stone ballast from being carried away by ice and the waves.

Spring tides rise here 6½ feet, neap 5 feet.

## MELBOURNE.

Melbourne is a settlement of some twenty or thirty families, engaged in fishing and farming, situated on the east side of the estuary of the Chebogue river, about eight miles east south-east from the town of Yarmouth.

In 1903-04, the department expended the sum of \$715.52 in constructing a block and span wharf, 100 feet long and 2½ feet wide, comprising three blocks of substantially built cribwork, each 25 feet wide, 9 feet long and from 12 to 15 feet high, two spans of 12 feet each, and an approach of earth and gravel 50 feet long, walled up with large stone on either side.

Spring tides rise about 12 feet, neaps about 10 feet.

## METEGHAN.

Meteghan, Digby county, is situated on the north side of St. Mary's bay, twenty-five miles north of Yarmouth, 20 miles south of Weymouth, two and one-half miles from Meteghan river and forty miles from Digby, the county town. The nearest railway station on the Dominion Atlantic Railway, which lies approximately parallel to the coast, and has its terminus at Yarmouth, is about seven miles distant. The whole coast of St. Mary's bay, from Digby to Yarmouth, is thickly settled, and is, in fact, almost one continuous straggling village for the whole distance of sixty-seven miles.

Meteghan, next to Digby and Yarmouth, is the largest and most important settlement of the bay shore, having a population of 1,000 people, engaged in farming, fishing, lumbering and general trade.

The harbour works consist of a breakwater and landing pier, built of cribwork, between 1837 and 1860 by the provincial government and the inhabitants. The pier is about 300 feet long and 20 feet wide. The breakwater 20 to 26 feet wide, runs out a distance of 925 feet from the shore, and has a return or ell of 85 feet at the outer end, which is 24 feet wide and 30 feet high, standing in from 25 to 27 feet depth at high water ordinary spring tides.

In 1875, at which date the work appears to have been taken over by the department, the breakwater was extended and repaired.

In 1878, the additional length of 100 feet was built with a portion of the ell at the outer end, at a cost of \$3,000, and in 1881, the sum of \$2,250 was expended in still further extending the structure by building an additional length of 50 feet on the ell. In 1882-83 the sum of \$500 was expended in reballasting and close-piling portions of the work, and in miscellaneous repairs. In 1883-84, \$32 was expended in securing some of the fenders and a portion of the flooring at the outer end. In 1884-85 some damage caused by a severe gale of the previous November was made good at a cost of \$96.64; a breach 25 feet long and from 4 to 6 feet deep was closed with solid work; 40 feet of new break was added, and some new ballast put in to replace that washed out. In 1887-88, the seaward face of the breakwater was close-sheathed for 700 feet in length; 575 feet of the inner face was repaired and sheathed, the whole work levelled up and some minor repairs executed; the expenditure that year was \$1,447.33,



## SESSIONAL PAPER No. 19

which in the departmental report for the year is given as a refund to the provincial government on account of moneys expended by them between 1867 and 1879. In 1892-93 the department expended the sum of \$299.72, in making slight repairs to the breakwater and in temporary repairs to the landing wharf. In 1893-94 the sum of \$2,627.54 was expended in making thorough repairs to the landing pier and wharf, the works done consisting of rebuilding and face-fendering the outer block 50 feet in length, building a new top and back 8 feet thick to the next length of 16 feet, and thoroughly refendering and capping the remainder of the work, a length of 250 feet.

In 1897-98 the sum of \$3,141.99 was expended in constructing a re-enforcing block along the whole length of the outer face of the ell of the main breakwater. This work, which was rendered necessary by the eating away of the bottom timbers by the limnoria, and the consequent settlement of the breakwater is 100 feet long, 12 feet wide and 4 feet high. The upper portion of the ell was also built 35 feet wide, and 4 feet high, which restored it to the height of the present work. The new work is well and substantially built of round-log cribwork, well fendered, ballasted and close-sheathed on all exterior faces. In 1898-99 the sum of \$1,093.20 was expended in renewing a length of 120 feet by 8 to 19 feet in height, and by 8 to 10 feet in width, of the lower portion of the outward end of the seaward face of the breakwater, which had been eaten away by the limnoria; the work was close-sheathed for the same distance, and for 40 feet on the inner side; about 10 feet in length of the flooring was renewed. A breach 30 feet long on the seaward side, adjacent shorewards to the 120 feet before mentioned, was also closed up.

In the fiscal year 1899-1900, the sum of \$2,000 was expended in extensive renewals and repairs to the breakwater, the work done consisting of the rebuilding of 100 feet in length of the seaward face and 90 feet of the inner or shoreward face, about 8 feet wide from top to bottom of the work, placing top cross-logs all across the breakwater to tie the new portions together, and a new floor on the portions renewed.

In 1900-1, the sum of \$3,499.95 was expended in rebuilding a serious breach made in the work by a severe gale in March, 1900. The new block, which had to be built from the bottom, is 180 feet long, 22 feet wide and from 18 to 22 feet high. In addition to this a length of 222 feet of the top of the breakwater was refloored and partly close-sheathed, the floor having been destroyed by the storm referred to.

In 1901-2, the sum of \$3,199.93 was expended in continuing the restoration of the breakwater that had been going on for the last three or four years. The work done consisted of a piece 138 feet long, in about the middle of the length of the breakwater being taken down and rebuilt. Of the next 200 feet shorewards the northern face was taken down and rebuilt 10 feet wide.

In 1902-3, the sum of \$2,999.47 was expended in completing the rebuilding of a piece in the middle of the breakwater, 123 feet long, 20 feet wide on top and from 3 to 11 feet high, that had been destroyed by a violent gale in the winter of 1901-02.

In 1903-4, the sum of \$2,342.31, was expended in continuing the reconstruction of the work carried on during the past few years. The work done this year consists of the taking down and rebuilding of 80 feet in length of the shore end of the work.

Spring tides rise 21 feet; neaps 17 feet. Total expenditure to June, 1904, is \$38,749.85, including a refund to the provincial government of \$1,447.33 in 1887-88.

The work was transferred to the control of the Department of Marine and Fisheries on June 12, 1888.

## METEGHAN RIVER.

Meteghan River, Digby county, empties into the Bay of Fundy, at the mouth of St. Mary's bay, almost directly opposite Grand Passage, between Long Island and Brier Island. The village at the mouth of the river is twenty miles south of Weymouth twenty-eight miles north of Yarmouth and two and a half miles north of Meteghan or Meteghan Cove. The population of the village is about four hundred people,

4-5 EDWARD VII., A. 1905

engaged in farming, fishing, lumbering and general trade. The nearest railway station on the Dominion Atlantic Railway which runs parallel with the Bay Shore, is about four miles distant. On the river, which is about eighteen miles long, are some twenty saw-mills, most of which send lumber down to the mouth of the river for export to the West Indies and United States, the total amount of the output aggregating a million feet board measure annually. The works here, which were built some years before confederation, presumably at the joint expense of the provincial government and the inhabitants, consist of two breakwaters, one on either side of the mouth of the river, and inclosing an area of about three acres, in which a depth of 10 to 15 feet is found at high water ordinary tides, giving ample berth accommodation and complete shelter to a large number of coasting and fishing vessels.

The north breakwater is about 400 feet long, 23 feet wide and 13 feet high at the outer end. Both breakwaters are built of stone-filled cribwork of the usual type. When the work came under the charge of the department, the older portions were much decayed, and extensive repairs were needed, which were made in 1873, at a cost of \$4,500. In 1881-2, the sum of \$2,000 was expended in rebuilding and repairing parts of both breakwaters. In 1882-3, the sum of \$3,000 was expended in close-piling and extending the south breakwater a length of 80 feet, in general repairs to the north breakwater, and in removing from the dock a large quantity of rocks and boulders which were used as ballast in the new work. In 1890-1, \$265.19 was expended in removing from the channel, near the shore end of the work, more rocks and boulders, that interfered with the keels of vessels lying alongside; slight repairs were also made under the same appropriation to both breakwaters. In 1898-9, the sum of \$4,110.76 was expended in extensive renewals to the shore end of the south breakwater; the work taken down and rebuilt was 400 feet long, with an average width of 29 feet and an average height of 19 feet. This length was newly close-sheathed, and on the shoreward side of the same portion a new breakwater was built, 276 feet long and 6 feet high. In the fiscal year 1899-1900 the sum of \$4,199.89 was expended in continuing the work of restoration of the main breakwater, a length of 216 feet of the shore end of the work, adjoining outwardly the portion of the work renewed, was taken down and rebuilt.

In 1900-01, the sum of \$8,848.55 was expended in continuing the restoration of this work begun in 1898-99, and in removing gravel from the bottom of the stream between the two breakwaters; 184 feet in length was taken down and rebuilt from the bottom, an average width of 27 feet, and from 18 to 19½ feet high. The next 213 feet shorewards, rebuilt the previous year, was floored, including stringers, caps and planks.

In 1901-02, the sum of \$3,999.99 was expended in continuing the work of restoration begun in 1898-99. The outer 113 feet of the work was rebuilt practically entire. In order to straighten the outer block of the work, it was widened 24 feet at the outer end, the new block tapering to nothing 83 feet shorewards from the outer end; 83 feet in length also of the outer end of the work was close-piled on the north side to protect it against scour by the river which issues at this side. A considerable quantity of gravel was also removed from the river channel to improve the approach to the wharfs.

In 1902-03, the sum of \$942.41 was expended in completing repairs and renewals to the breakwater in progress during the past two seasons. The work done included the renewal of the upper portion of the outer end of the breakwater and in further deepening the river channel alongside the outer end of the work.

In 1903-04, the sum of \$300.99 was expended in protecting with close-piling a length of 73 feet on the eastern side of the breakwater, that was undermined by ice and waves during the previous winter.

Spring tides rise 21 feet, neaps 17 feet.

The total expenditure to June 30, 1904, was \$36,031.89.

This work was transferred to the control of the Marine and Fisheries on June 12, 1888.

## SESSIONAL PAPER No. 19

## MIDDLE RIVER.

Middle River, Victoria county, is a large stream emptying into Indian bay, on the northern shore of St. Patrick's channel, an arm of the Little Bras d'Or lake.

About 5 miles from its mouth, the river flows through alluvial soil, easily acted upon by the strong current during freshets, and in consequence a large amount of valuable land has been destroyed.

The sum of \$2,400 was voted for expenditure during 1903-04 in the construction of a shear-dam, built with piles, brush and stone, 600 feet in length, to divert the stream into an old river bed, and away from the valuable lands.

Plans and specification for the work proposed were prepared, and the materials required were procured during the winter, but owing to the height of water in the river, caused by spring freshets, the work of construction was not commenced until the middle of June, and on June 30, 1904, 200 feet of the pile-work was completed and sheathed on the upper side, but the interior was only partly filled with brush and stone.

The expenditure for the year ended June 30, 1904, was \$1,405.35.

## MUSQUODOBOIT.

The village of Musquodoboit, Halifax county, with a farming and lumbering population of about 500, is situated in and around the head waters of Musquodoboit harbour proper, and Petpeswick harbour, which at their extreme heads are only about a mile apart.

In 1901-2, the department expended the sum of \$1,183.26 in building a small wharf for the convenience of the inhabitants of the district, and the shipment of lumber, of which some three million feet are annually exported, for the shipping of general farm produce and the loading of fuel and general merchandise. The work consists of a block of cribwork, 51 feet long, 17 feet wide and 14 feet high, with an earth and stone approach 50 feet in width, 80 feet in length and of an average height of 9 feet.

In 1903-4, the sum of \$271.39 was expended in completing to its full and proper width the earth and stone bank approach. The total expenditure by the department to June 30, 1904, was \$1,454.65.

## NECUM TEUCH.

Necum Teuch (pronounced 'Necumtau'), Halifax county, is the name given to the settlement lying on the east side of Necum Teuch bay, at the mouth of Moser's river. It is sixty-eight miles in an airline ENE., from Halifax, and six miles from Salmon river. The population of the place embraces about 400 people, engaged in farming and lumbering. About 2,000,000 feet of deal and hardwood are sawn annually at Moser's river, at the head of the bay. A small coasting steamer makes weekly calls, landing freight and passengers at a detached block of cribwork in the stream, whence they are transferred in small boats to the settlement.

In 1902-3, the sum of \$790.13 was expended in commencing the construction of a wharf. The work done for this small expenditure consists of a road approach, about 500 feet in length constructed of earth embankment, and about 70 feet in length of cribwork at the shore end of the wharf.

In 1903-4, the sum of \$4,421.45 was expended in completing the construction of the wharf. The work, which is of block and span construction, is 394 feet long and 20 feet wide, with an L on the outer end, giving a face length of 40 feet and a width of 30 feet. The shore block is 41 feet long, following it are seven blocks of 12 feet each, two blocks 19 feet, and the outer block is 101 feet long. Between are ten spans of 13 feet each. All the blocks are substantially constructed of round-log cribwork,

4-5 EDWARD VII., A. 1905

filled solid with stone ballast, and well fendered and bolted. Along the outer face the face is 20 feet high giving about 16 feet of water at high water ordinary spring tides. Spring tides rise 6 feet, neaps 5 feet.

## NEWELLTON.

Newellton, Shelburne county, is situated about two miles north-west of Clark's harbour and has a population of about 350.

A wharf was constructed at this place in the fiscal year 1899-1900, with a view of affording adequate facilities for the several small steamers, which ply along this part of the coast and which, in the past, were unable to land passengers and freight without serious discomfort and difficulty.

The wharf is 238 feet long and consists of a substantial rock-bank approach, 108 feet in length, 30 feet wide on top, 8 feet high at the outer end; two stone-filled cribwork blocks, each 19 feet in length, separated by a span of 11 feet, and seven pile bents placed 10 feet apart centre to centre. The width of the pile bents and cribwork blocks is 20 feet with a height of 23 feet at the outer end. The cost of this work was \$1,999.99.

Owing to the heavy undertow it was very difficult for a vessel to lie inside of the structure which was under an almost constant severe strain.

In the year 1901-2, the sum of \$399.59 was expended in repairing the stone approach and sheathing the outer pile-work with 4-inch deals fastened with 9-inch spikes made of  $\frac{3}{4}$ -inch iron. This sheathing was, however, inadequate as the ice and waves made slight breaches in it, and the water flowing in and out soon threatened the life of the wharf itself.

During the fiscal year 1903-4, the sum of \$235.21 was expended to remedy this defect. The work performed consisted in removing the old sheathing, replacing six bearing piles, renewing two pieces of guard-timber and the exterior stringers, also close-piling seventy feet in length of the outer end with spruce piles, 9 inches at the small end and from 23 to 30 feet in length. Spring tides rise here 9 feet and neap 6 $\frac{1}{2}$ .

## NEW HARBOUR.

New Harbour, Guysborough county, is on the southern or Atlantic coast of Nova Scotia, 30 miles to the westward of Canso harbour. It is merely a shallow bay, open to the southeast, at the head of which is the entrance to St. Catherine's river, navigable for boats 5 miles inland.

A contract, entered into in May, 1900, for the construction of a breakwater at Black Point, on the western side of the bay, was completed September 27, 1900.

The breakwater consists of a stone embankment 160 feet in length and 7 feet in average height, between the shore and 'Black Rock,' a stone embankment 89 feet in length and 18 feet in average height, in extension of 'Black Rock,' and 150 feet of cribwork 25 feet in width, with creosoted substructure, and with a talus on the seaward side sloping 1 $\frac{1}{2}$  to 1 from high water.

The height of the cribwork over 15 feet of its width on the seaward side is 7 feet, and over 10 feet of its width on the inner side 3 feet 4 inches, above extreme high water. The depth, at extreme low water, at the inner and outer ends of the cribwork are respectively 6 and 16 $\frac{1}{2}$  feet. Spring tides rise 6 feet.

During a southerly gale in October, 1900, the outer section of stone embankment was nearly destroyed, the cribwork was slightly damaged, and most of the stone in the talus on the seaward side of the cribwork was carried away.

In 1901-02, the sum of \$3,693.04 was expended in repairing the cribwork, and in strengthening it by placing a second 6-inch covering over the covering of the inner 10 feet; in constructing a concrete wall, 89 feet in length, 12 feet in width, on top, and

## SESSIONAL PAPER No. 19

10 feet in average height over the remains of the outer embankment, and another concrete wall 75 feet in length, 8 feet in width and 4 feet in average height over 'Black Rock,' and in slight repairs to the inner embankment.

In 1903, the sum of \$5,999.77 was expended in repairing 50 feet of the concrete work between 'Black Rock' and the cribwork, by placing concrete where undermining had taken place; in reconstructing about 30 feet of the outer end of the stone embankment between the shore and 'Black Rock,' and in placing a talus of heavy stone (5 to 8 tons) on the seaward side of the outer concrete work and of the cribwork extension.

During the fiscal year ended June 30, 1904, the sum of \$741.74 was expended, \$475.51 in September and October, 1903, in completing the talus on the seaward side of the cribwork extension and in repairing and strengthening the road (side cutting and embankment) leading to the breakwater, and \$205.48 in June, 1904, in placing a second covering over the outer section of the cribwork extension and in repairing and strengthening the stone embankment between the shore and 'Black Rock.'

The total expenditure to June 30, 1904, was \$27,905.29.

## NORTH INGONISH.

Ingonish (North), Victoria county, is on the north-east coast of Cape Breton Island, about midway between Sydney harbour and Cape North. It is separated from the south bay of Ingonish by a narrow, rocky and precipitous peninsula, over two miles in length.

On December 6, 1899, a contract was entered into for the construction of a breakwater off Archibald's Point, on the north side of the bay, for the purpose of forming a harbour of refuge for fishing boats, and the work was completed on December 20, 1900.

The breakwater is 454 feet long, with an L 77½ feet long, and from 18 feet at the inner to 24 feet wide at the outer end, it is constructed of squared timber, laid close-faced, with creosoted timber substructure, fully ballasted and fendered, the seaward face and end are sheathed and protected by a heavy stone talus.

During 1901-02-03, the stone talus, which was somewhat flattened out by the action of the sea, was raised, at a cost of \$2,466.88.

During the fiscal year ended June 30, 1904, the sum of \$542.76 was expended in the removal, by submarine blasting, of several large boulders near the outer end of the breakwater, which were a source of danger to vessels or steamers approaching or leaving the breakwater.

The depth of water along the face of the L, at low water springs, is 11 feet. Spring tides rise 4 feet.

The work has proved of great benefit to the fishermen of the district.

The total expenditure on this work to date was \$30,558.56.

## NORTH RIVER.

North River, Victoria county, empties into the northern arm of St. Ann's harbour, a commodious basin 7 miles in length and about 2 miles wide, with a great depth of water, at the head of St. Ann's bay, on the eastern coast of Cape Breton island.

The wharf constructed by the department at Seymour's Point, on the northern side of the mouth of North river, during 1898-99-1900, extends to 9 feet at low water, and consists of a road approach 64 feet long and 16 feet wide, of a block and span work 63 feet in length and 20 feet wide, with a return of 20 feet at its outer end.

All the bearing and mooring piles in the pile work were to be of creosoted timber, excepting the piles in the three inner bents, which being driven above the level of low water, and considered safe from the attacks of the teredo, were to be of spruce; but as there was a shortage of creosoted piling in the cargo received, and none could be

4-5 EDWARD VII., A. 1905

obtained in the island, the contractors were permitted to substitute native timber piling for three bents at the inner end, and the difference in cost was deducted from the contract price.

An examination of the wharf, made on January 27, 1903, showed that some of the native timber bearing piles have been cut into by the teredo, and that the rest were much weakened, and in order to make the wharf safe for traffic, until it could be properly repaired, the sum of \$45.88 was expended during the fiscal year 1902-3, in placing posts under the pile-caps in the six inner bents of the pilework to take the strain off the damaged piles.

The sum of \$900 was voted for expenditure during the last fiscal year, in replacing the native timber bearing piles with creosoted timber, and in renewing the hardwood fender piles. All the necessary materials were obtained and delivered, but owing to the difficulty of obtaining a suitable pile driver the work was not completed by the end of the fiscal year. The amount voted and expended was \$689.68.

Spring tides rise 6 feet.

The total amount expended on this work to June 30, 1904, was \$3,099.11.

#### OGDEN'S POND.

Ogden's Pond Antigonish county, is on the western shore of St. George's bay, about 13 miles south from Cape George, and 9 miles north from the town of Antigonish. It is a small sheet of water, about 100 acres in extent, separated from the bay by a sand beach of from 130 to 250 feet in width.

For the purpose of rendering the pond which has a depth of over 10 feet at low water, accessible to boat and small craft, during 1900-01-02, a channel 30 feet wide and 825 feet in length, was cut through the beach and the flat inside, down to a depth of about  $1\frac{1}{2}$  feet below low water, and a channel protection work, 350 feet in length was constructed in the northern side of the entrance. The work consisted of a brush and stone embankment, 70 feet long and 8 feet wide on top, with sides sloping  $\frac{1}{2}$  to 1; a pile, brush and stone work 260 feet long and 10 feet wide, close-sheathed on the seaward face; and of a round timber cribwork block 20 by 20 feet at the outer end, with creosoted timber substructure and close-sheathed in all outer faces.

On November 11, 1902, during a terrific north-east gale, the brush and stone in the work were washed out by the sea, and afterwards, for a distance of 130 feet, the piles were broken off and washed away, leaving the cribwork block at the outer end, uninjured.

During the fiscal year 1903-4, the sum of \$1,449.87 was expended in replacing the damaged pilework for a distance of 150 feet with cribwork, in refilling the balance of the pile-work with brush and stone, and in placing a covering over all, and a further quantity of ballast, about 160 cubic yards, was delivered, to be used in the protection to the channel through the flat, inside of the beach.

Total expenditure up to June 30, 1904, was \$5,783.76.

#### PARKER'S COVE.

Parker's Cove, Annapolis county, is a small indentation on the southeast shore of the Bay of Fundy fifteen miles north-west of Digby Gut, and seven miles north of Annapolis, the county town. The population of the settlement is about 250 people, engaged in farming and fishing.

In 1883-84, the department constructed a small breakwater substantially built of round-log cribwork, stone-filled, 200 feet long,  $23\frac{1}{2}$  to 26 feet wide on top, and at the outer end 16 feet high, where at high tide there is a depth of about 11 feet of water.

In 1900-01, the department extended the breakwater a distance of 101 feet, at a cost by contract of \$3,749. The new block is 26 feet wide on top, and from 16 to 19 feet high, substantially built of round-log cribwork, filled with ballast, well fendered, close-sheathed on the seaward side and outer end.



## SESSIONAL PAPER No. 19

In 1901-02, the sum of \$73.50 was expended in placing a quantity of large stone on the eastern side of the breakwater, near its outer end, to prevent the waves from undermining the work.

In 1902-03, the breakwater was extended a further length of 130 feet, with an L on the outer end, having a face length of 82 feet. This work, which was built by contract, at a cost of \$10,212.60, is from 20 to 29 feet high, the stem 26 feet wide and the L 30 feet wide on top. The landward side batters 1 in 6, while the eastward side is plumb and provided with a solid timber break 4 feet 6 inches high. The work was begun on June 11, 1902, and the whole work thoroughly well completed on November 20, of the same year. The extension is very strongly built of round-log cribwork, filled to the top with stone ballast, well fendered and bolted, and close-sheathed on the seaward face.

In 1903-04, the sum of \$1,191.10 was expended in rebuilding the upper 2 to 4 feet in height, by 25 feet in width, of the shoreward end (the older portion of the breakwater) and in protecting the fore-shore on the eastern side of the work with large stone to prevent the sea from undermining the new block.

Spring tides rise about 30 feet.

The total expenditure to June, 1904, was \$17,518.24.

## PARRSBORO.

Parrsboro' is an important town, of about 2,800 people, situated at the right bank of the Partridge Island river, which empties into the north side of the Basin of Minas.

In 1901 a pier was constructed on the north side of the mouth of the river. It consists of an approach of gravel and clay 25 feet long; a block and span work 140 feet in length; pile work for a length of 170 feet, and a cribwork head 40 feet in length.

Owing to the strong current running through the pile work, vessels could not be moored on the inner side of the wharf.

During the fiscal year 1903-04, the sum of \$922.10 was expended in closing the open pile-work with sheathing and also driving 34 fender piles on the outside of the sheathing.

Spring tides rise 40 feet, neap 33 feet.

## PEMBROKE.

Pembroke, Hants county, is a small farming and lumbering settlement with a population of about 175, situated on the south shore of Minas Basin, 9 miles east of Cheverie and 3 miles west of Walton. The lumbering industry is represented by the annual shipment of about 3 million feet of deals and from five to ten thousand pieces of piling. As an aid to local business, and a protection to vessels loading and discharging, the department awarded a contract on March 28, 1904, in the sum of \$7,970 for the construction of a breakwater. At the close of the fiscal year 1903-04, the work was half completed, the contractors having earned payments to the extent of \$4,096.81.

Spring tides rise about 48 feet, neap about 40 feet.

## PETIT DE GRAT.

Petit de Grat Inlet, Richmond county, lies between Petit de Grat island and the eastern extremity of Madame island. The main entrance is at the southern end from the Atlantic; the northern entrance, from Rocky bay, is obstructed by outer and inner bars, through which passages for boats at ordinary low water, were opened by the department between 1879-82.

During 1898-99-1900-01, both channels were widened and improved by hand dredging, and a cribwork protection was constructed on the western side of the outer channel.

4-5 EDWARD VII., A. 1905

At the end of June, 1901, the outer channel was about 350 feet long and 25 feet wide, with a depth of 2 feet at low water, while the inner channel was 285 feet long, 20 feet wide, and with the same depth as the outer channel. The protection work, 298 feet in length, consisting of ordinary round timber cribwork, was fully ballasted but not covered.

The sum of \$1,000 was voted for expenditure during 1901-2 for the reconstruction of a portion of the protection work and for deepening the channels, but as it was found that the beach on the eastern side of the channel was moving rapidly to the westward, and had already encroached upon the channel, and the amount available was not sufficient to check the movement, the amount was not expended, and it was decided to abandon the old work and to open a new channel to the westward of it.

In 1902-3 the sum of \$916.36 was expended in procuring materials for the construction of a protection on the eastern side of the new channel.

During the last fiscal year the sum of \$3,022.81 was expended in the cutting of a channel 285 feet in length, 20 feet wide in the bottom and to a depth of 2 feet below low water springs, and in the construction of a protection work on the eastern side of the channel, 200 feet in length, 12 feet wide for a distance of 160 feet, and 20 feet wide for the remaining distance of 40 feet, constructed with round timber, fully ballasted and fendered, the outer end for a distance of 40 feet covered with plank, and the eastern face, the end, and the western face, for a distance of 40 feet from the outer end, close-sheathed with hardwood plank.

Spring tides rise 6 feet.

Total expenditure, to June 30, 1904, was \$8,363.72.

#### PICKET PIER.

The Picket Wharf, King's county, so-called, is situated on the south side of the mouth of the Habitant river, two miles below the village of Canning, and at the lower end of the village of Canard. It is conveniently placed with regard to a large and thickly populated area of the richest fruit-growing and agricultural land in Nova Scotia.

The wharf was begun in 1845, and extended in 1859-60, by the inhabitants, aided by the provincial government. Since these dates the department has expended upon it in renewals and general repairs: in 1878, \$500; in 1885, \$100, and in 1886, \$500.

It is 190 feet long, 60 feet wide, and at the outer end, which is now about 5 feet below high water ordinary spring tides, it is 23 feet high. Spring tides rise 48 feet, neaps 40 feet. During the year 1896-97, the sum of \$496.88 was expended on some very necessary repairs. The work done consisted of the rebuilding of the crib break-water along the outer face of the shoreward end for a length of 170 feet, that had fallen into decay and threatened to make an island of the main portion of the wharf. Portions of the top of the wharf were also filled up with stone and gravel, so that teams could come alongside vessels loading potatoes and other produce.

Since 1897, the work had become so dilapidated as to be practically useless for shipping purposes, and in 1903-04 the department accordingly expended the sum of \$2,309.65 in beginning the construction of a pile-work pier over and on top of the ancient cribwork structure.

On June 30, 1904, the work was about two-thirds done.

#### PICTOU LIGHT BEACH.

The beach forming the southern side of the entrance to Pictou harbour, known as Pictou Light Beach, extends about one mile in a northerly direction, inclosing Moodie Cove, an inlet nearly dry at low water, except in a central channel. The outer end of the beach, on which stands a lighthouse and keeper's dwelling, is protected by a breastwork of squared timber, 450 feet in length, and by a work of brush and stone



## SESSIONAL PAPER No. 19

extending from side to side of the beach, opposite the southern extremity of the breastwork, and inclosing property under the control of the Department of Marine and Fisheries.

In 1894-95, the sum of \$300 was expended in acquiring a title to a portion of the beach 1,520 feet in length, adjoining the property of the Department of Marine and Fisheries.

During 1898-99, a brush and stone-work 1,030 feet in length, 10 feet wide and 4 feet in height was constructed along the beach to prevent its wearing away by the action of the seas during gales ; and two groins, respectively 65 and 55 feet in length, composed of piles, brush and stone, were built off the brush and stone-work for the purpose of gathering the sand.

In 1900-01, the sum of \$522.77 was expended in the construction of a third groin, 75 feet in length, opposite the end of the breastwork built by the Department of Marine and Fisheries, and 200 feet to the northward of the first groin, and in slight repairs to the brush and stone work ; but the groin completed in November was undermined and destroyed during a heavy easterly gale early in December, 1900.

During 1901-02, the sum of \$608.28 was expended in raising the brush and stone work, which had settled, for a distance of 710 feet, and as it was found that the beach south of the end of the work was wearing away, the protection work was extended for a distance of 120 feet. The extension consists of brush and stone-work, 10 feet wide and of an average height of 4 feet.

Spring tides rise 6 feet.

The work for which the appropriation for 1903-04 was intended, viz., the reconstruction of the breastwork at the outer end of the beach, was performed during that year by the Department of Marine and Fisheries.

## PINKNEY'S POINT.

Pinkney's Point, Yarmouth county, is a small fishing and farming village of about 150 people, situated near the extremity of the headland between Chebogue river and Little river, a distance of about twelve miles south south-west of the town of Yarmouth.

In 1901-02, the department expended the sum of \$998.73 in constructing a small breakwater for the purpose of affording some small measure of protection to the fishing boats, and to serve also as a landing wharf for an occasional schooner load of general merchandise for local consumption.

The work consists of a block of round-log cribwork, 20 feet square, 14 feet high, with an approach 93 feet long, 20 feet wide and from 4 to 13 feet high, built of stone and walled up on each side with split boulders. The outer edge of the cribwork block is dry at low water mark.

In 1902-03, the sum of \$48.69 was expended in flooring the block of cribwork 20 feet square, built the previous year, and placing 8 fenders.

In 1903-04, the sum of \$68.26 was expended in replacing a large quantity of large stones on the shoreward end and seaward side of the work, which were washed and lifted out of position by heavy waves and ice, during the previous winter.

Spring tides rise 12 feet ; neaps, about 10 feet.

## PORT AU PIQUE.

Port au Pique is a thriving farming and lumbering settlement of some 400 or 500 people, situated on the north shore of the Basin of Minas, Colchester county, about eight miles west of Great Village and six miles east of Bass river. Hitherto, in the absence of a wharf, vessels coming to either load or discharge have had to lie aground on the beach where they could be reached by teams at low water. This was a dangerous practice and resulted in the destruction of several vessels in the course of the last few years. To encourage and develop local trade, and for the convenience of shipping,

4-5 EDWARD VII., A. 1905

the department in 1903-04, expended the sum of \$543.62 in the purchase and delivery of materials for the purpose of constructing a suitable public wharf of pile-work.

Spring tides rise  $50\frac{1}{2}$  feet, neaps,  $43\frac{1}{2}$  feet.

## PORTER'S LAKE.

Porter's lake is a long and narrow strip of fresh water, lying nearly north and south, situated about the middle of Halifax county, or about fifteen miles east of the provincial capital. It is about eighteen miles in length, from a quarter to a half mile in width, and the water being of good depth for almost its entire length, it is navigable for vessels of about 60 tons, to the extreme head. The normal level of the lake is some 2 or 3 inches above high water ordinary spring tides which, on the coast here, rise 6 feet, and neaps 5 feet.

Up to about 1873 the outlet, which was directly into the Atlantic through a gravel beach, about 200 feet wide, was navigable for schooners drawing 6 feet of water, and a considerable trade was then done on the lake in the export of timber, lumber, cordwood, general farm produce and fish. Since that time the outlet has been gradually and permanently filling up with the accumulation of gravel washed in by southerly and easterly storms. In order to maintain the outlet, to prevent the roads along the margin of the lake from being flooded, and also to admit fish into the lake, the following small expenditures have been made by the department :—

1881-82.. . . .	\$ 200 00
1884-85.. . . .	200 00
1899-90.. . . .	200 00
1892-93.. . . .	147 00
1897-98.. . . .	100 00
1898-99.. . . .	200 00
1899-1900.. . . .	150 00
1902-03.. . . .	49 99
1903-04.. . . .	325 15
	<hr/>
	\$ 1,572 14

These expenditures having resulted in but slight temporary relief and no permanent improvement, the department in 1900-01, expended the sum of \$2,262.44, in beginning the construction of a permanent channel through the neck of land, 2,400 feet wide, separating the main body of the lake from the extreme head of Three Fathom Harbour. In 1901-2 a further sum of \$5,987.24 was expended on the permanent outlet. In 1902-03 the sum of \$2,455.67 was expended on the permanent, and \$49.99 on the temporary (old) outlet.

In 1903-04 the sum of \$325.15 was expended in several times reopening the old outlet.

Total expenditure to date :—

On permanent outlet.. . . .	\$16,705 35
On temporary outlet.. . . .	1,572 14
	<hr/>
	\$18,277 49

## PORT GEORGE.

Port George, Annapolis county, is a village of some 400 people situated on the south of the Bay of Fundy, 37 miles north-east of Digby Gut, 42 miles south-west of Scott's bay, nine miles south-west from Margareville, and seven miles north-west from Middleton on the Dominion Atlantic Railway.

## SESSIONAL PAPER No. 19

Some years before confederation, the provincial government built a western breakwater and an eastern pier or wharf. The breakwater is 440 feet long, from 25 to 35 feet wide on top, and at the outer end, where there is about 21 feet of water at high water ordinary spring tides, it is 25 feet high. It is built of round-log stone-filled cribwork, the western or seaward face and outer end being closely sheathed.

The wharf on the eastern side of the little harbour is 205 feet long, 20 feet wide and 18 feet high at the outer end. It is built of round-log cribwork, and the outer end, on which is built a small lighthouse, is closely sheathed. In 1874, the harbour was taken in charge by the Public Works Department, and in that and the following year the sum of \$7,000 was expended in repairing and refacing the breakwater, which was much decayed. In the autumn of 1888, the outer end of the breakwater was destroyed by a severe storm, 165 feet in length being wrecked, and an additional length of 30 feet being much injured. Before repairs could be made, a second storm destroyed the damaged portion, leaving 195 feet of the work a complete wreck, and rendering the harbour practically useless.

In 1900-01, the destroyed portion of the work was rebuilt by contract.

In April, 1894, an exceptionally severe northeast gale caused a serious breach in the breakwater at about midway of its length, or immediately shorewards from the new outer block. The breach was 40 feet long for the full width of the work, and about 17 feet high; it was closed in the autumn of the same year.

In 1900-01, the sum of \$400 was expended in repairing the eastern breakwater wharf. The outer 30 feet in length was refloored, and the close-sheathing for the same length was renewed. New fenders, guard timbers and mooring posts were also placed. The sum of \$1,653.60 was also expended in the construction of a detached breakwater about 200 feet eastward from the main end of the work. The object of this is to break the seas and afford a much needed shelter to schooners lying alongside the breakwater.

In 1901-02, the sum of \$2,297.46 was expended in continuing the construction of the detached breakwater begun the previous year. The work thus extended measured 102 feet long, 32 feet high at the lower end and 26 feet at the upper, 20 feet wide at top. It is plumb on the seaward face and batters one in four on the back.

In 1902-03, the sum of \$2,287.46 was expended in beginning the construction of an extension of 100 feet in length of this work.

In 1903-04, the sum of \$5,807.95 was expended in completing the breakwater begun in 1901 and in renewing the top of the 200 feet in length of the main breakwater a height of from 3 to 5 feet. The detached breakwater is 200 feet long, 30 feet wide on top and 17 to 32 feet in height. It is very strongly built of round-log cribwork, filled with stone.

Spring tides rise 30 feet.

The total expenditure to June, 1904, is \$37,605.46, including a refund to the provincial government in 1887-88, of \$1,076.75. This work was transferred to the control of the Marine and Fisheries Department on June 12, 1888.

## PORT GREVILLE.

Port Greville, Cumberland county, is a village of about 300 people, situated 12 miles west of Parrsboro. Important shipbuilding and lumbering interests are located at this place, which are mainly dependent upon the security of its harbour.

The harbour is formed by a high gravel bar, lying parallel to the shore, inside of which the river runs for a half mile before reaching low water mark.

For the purpose of protecting this bar, which was threatened with destruction, the department, in 1874, constructed upon it a cribwork wall, 2,200 feet in length, 10 feet wide on top with an average height of 7 feet.

In the fiscal year 1886-87, the department constructed a breakwater off the eastern end of the cribwork wall, for further protection to the harbour. It is 250 feet in length, 21 feet wide on top with an average height of 20 feet and has a slope on

4-5 EDWARD VII., A. 1905

the seaward end of  $\frac{1}{2}$  to 1, whilst the seaward face and outer end were sheathed with 6-inch plank, well fastened.

In 1902-03, the beach protection work was rebuilt at a cost of \$4,071.10.

During the fiscal year 1903-04, the sum of \$697.59 was expended in rebuilding 60 feet of protection work. Spring tides rise 40 feet, neap tides 34 feet.

## PORT HAWKESBURY.

Port Howkesbury, Inverness county, is on the eastern side of the Strait of Canso, nearly opposite Port Mulgrave.

The sum of \$2,000 was appropriated for expenditure in 1901-2 towards the construction of a wharf. During the year a survey was made and a plan and specification prepared for the reconstruction of a wharf known as the 'long wharf.'

A contract was entered into on September 11, 1902, for the reconstruction of the 'long wharf' for the sum of \$9,450.

The work under contract comprises the construction of an abutment 35 feet in length, with end and side walls of stone; the reconstruction from 2 feet above low water of 3,912 feet of block and span work, including 8 cribwork blocks 31 to 38 feet in length and 22 to 24½ feet in width; and the reconstruction and extension of the 'head' including the removal to 2 feet above low water of parts of 2 cribwork blocks and the construction of cribwork and pile 'head' 73 feet 9 inches in line of work by 112 feet.

Construction was commenced April 23, 1903, and satisfactory progress was made up to June 30, the same year, when the new cribwork over all blocks, excepting one, was approaching completion, and when the estimated value of work performed was \$2,780.

Operations were continued up to October 19, 1903, when it having been ascertained that ledge rock would prevent the construction of the pile 'head,' a contract was entered into for the removal of cribwork and ballast covering the site of a proposed cribwork 'head' for \$2,900.

The work was commenced October 12, and completed November 26, 1903.

Subsequently separate contracts were made for the removal of the outer block of the approach (damaged by ice) for \$900, and for the construction of a cribwork 'head' in place of a pile 'head'; the reconstruction of the outer block of the approach, and the construction of a roadway at the inner end for \$6,700. Operations were resumed June 13, and were in progress at the close of the fiscal year.

The expenditure during the fiscal year 1903-4 was \$8,122.50.

The reconstruction of the 'long wharf' was completed September 19, 1904.

## PORT HOOD.

Port Hood, the shire town of the County of Inverness, is on the west coast of Cape Breton island, 20 miles north of the northern entrance to the Strait of Canso.

A pier on the east side of the harbour, commenced by the provincial government in 1865, was originally 550 feet in length and 24 feet in width, with an 'L' on the south side of the outer end, 100 feet in length and 25 feet in width. It came under the charge of the Federal government in 1871, since which time extensive repairs and renewals have been made, including the construction of a new block, 125 by 25 feet, at the outer end, in 1873; the construction of a block 50 by 32 feet at the south end of the 'L' in 1888-89; and the construction of a block 71 by 24 feet at the outer end in 1889-90. The old provincial government work was of square timber, close-faced; the additions and parts reconstructed by the department are of round timber laid open-faced. The piers have been protected on the seaward side, at the outer end, and on the south end and inner side of the 'L,' by close-piling, and on both sides to within 74 feet of the outer end by a stone talus.

## SESSIONAL PAPER No. 19

In 1902-03, the sum of \$199.99 was expended in urgent repairs, including replacing ballast where required and temporary repairs to the covering.

During the fiscal year ended June 30, 1904, the sum of \$1,500.01 was expended in repairing and strengthening the outer end of the pier. The work performed included : close-piling (inside) and reballasting the face chambers at the outer end on the seaward side near the outer end; repairing the covering, and renewing the close-piling at the outer end and on the seaward side in places.

The total expenditure to June 30, 1904, including \$916.11 refunded to provincial government, was \$61,592.20, and \$2,078.58 for dredging.

## PORT HOOD HARBOUR.

The harbour of Port Hood is on the west coast of Cape Breton island, about 20 miles to the northward of the northern entrance to the Strait of Canso.

The harbour was formerly a secure one, Smith island, which forms its west side, having been connected with the mainland by a range of sand hills. In 1893 the sea made a breach through this protection; the opening, at first narrow, was enlarged by the tidal currents with increasing rapidity until it was entirely swept away. The harbour is now unsafe during northerly gales, except in a small cove on the east side of Smith island.

In March, 1902, a report was submitted on the closing of the northern entrance in which the estimated cost of work suggested varied from \$482,000 to \$291,000, according to design and location.

During the fiscal year 1903-04, the sum of \$2,968.85 was expended in constructing a length of 330 feet, 28 feet wide on top, of a proposed breakwater, and in procuring materials for its construction.

## PORT HOWE.

Port Howe, Cumberland county, or Port Philip, as it is commonly called, is situated about four miles west by south of Pugwash, and is a struggling settlement from three to four miles in length with a population of about 500 inhabitants. The chief occupation of these people is farming, although some small interests are engaged in lumbering and fishing.

The site of the wharf is at River Philip Bridge and is located along the flats bordering on the channel and running parallel to it. Much hay, tan-bark, &c., have in the past been loaded here and the necessity of a wharf for the better handling of such commodities was greatly felt.

During the fiscal year 1903-04, the department has constructed a wharf at this place at an expenditure of \$1,964.19.

The wharf consists of three blocks of cribwork each 22 feet in length and 20 feet wide on top and three spans, the first being 12 feet and the other two 15 feet in length. The centre span has attached to it another crib 22 feet in length and 20 feet wide which makes that portion of the work 40 feet wide. The height of the wharf at the outer side is 23 feet average, and 14 feet on the inner side. The cribwork is built of round logs filled with stone and well fendered and fastened. Spring tides rise here 7 feet and neap 4 feet.

## PORT LA TOUR.

Port LaTour, Shelburne county, is a fishing and farming community, situate 25 miles south-west of Shelburne town, with a population of 700.

The harbour is about four miles long, north and south, and two miles wide, east and west, and has a depth of water of from five to seven fathoms. The tides rise and fall, spring 10 feet and neap 7.

4-5 EDWARD VII., A. 1905

Though the outer harbour, is somewhat exposed to the south-east (this being the quarter from which the most destructive and severe gales arise), the inner harbour formerly afforded some measure of shelter and protection to the northward and westward of the sand-flats, lying between Page's island and Swain's point, on which there is from 6 to 8 feet of water at low water ordinary spring tides. Since, however, an unusually heavy storm, some years ago, tore from these flats, the thick growth of eel-grass, with which they were covered, the undertow now washes over them. Vessels, lying at anchor, awaiting a cargo or favourable wind, are in danger of dragging ashore, and the need of a protected anchorage is therefore unquestioned.

To most effectually meet this requirement, it was necessary to construct a breakwater, starting from Swain's point and running in a north-easterly direction.

The work was commenced during the fiscal year 1898-99, and continued in the years 1899-1900 and 1902-03. At the end of the fiscal year last mentioned, the breakwater had been built on a length of 392 feet, 25 feet wide on top, with slopes of 2 to 1 on the seaward side and 1 to 1 on the harbour side, the height ranging from 10 to 17 feet, and the amount expended was \$7,547.79.

The work consists of a stone embankment, with outer and inner walls generally 5 feet in thickness, of large stone, the space between the walls is filled with smaller stone, and the top of the middle part is finished with a layer of good gravel about 9 inches in thickness. On top of the outer wall, a break, generally 2 feet high, is built of cut granite on the whole length of the work.

During the fiscal year 1903-4, the sum of \$1,097.64 was expended for the construction of a further length of 40 feet of breakwater, the extension built is 25 feet wide on top and 28 to 30 feet at bottom, 16 feet high at the inner end and 17½ feet at the outer end, or 700 cubic yards of rock work.

The total expenditure on this work, up to June 30, 1904, was \$8,645.43.

#### PORT MAITLAND.

Port Maitland, Yarmouth county, is a prosperous and important fishing and farming village, with a population of about 600, situated on the southeast side of the mouth of the Bay of Fundy, 12 miles north of the county town of Yarmouth.

The harbour works were begun about the year 1859, by the provincial government. They consist of an eastern and western or main breakwater of cribwork. The former is 400 feet long by some 20 feet wide, and the latter 500 feet long, 22 to 25 feet wide, with a return of 54 feet long, 24 feet wide and 27 feet high along which there is a depth of 19 feet at high water ordinary spring tides. These breakwaters or piers inclose between them a snug high-water harbour of 2½ acres in extent.

In 1873-4, the eastern breakwater was raised and widened for a length of 158 feet on the shore end, and an extension of 50 feet in length was built on the outer end of the western breakwater. In 1885-6, the sum of \$349.92 was expended in raising the outer end of the eastern breakwater, and in repairing and partly renewing the sheathing of the outer face of the western breakwater. In 1887-8, the western breakwater was repaired and the following year, 1888-89, both sides of the breach were closed up, and a number of fender piles were driven along the outer face and exposed corners of the broken work.

On June 24, 1890, a contract was made for rebuilding the destroyed section and repairing the other parts of the work. The seaward face, i.e., 83 feet in length outside the new work, and 100 feet between it and the shore, was close-piled; the entire top was rebuilt and new fenders were fitted on the inside face. In 1891-2, the sum of \$296.45 was expended in repairing the eastern breakwater, and in 1896-7, extensive repairs and renewals were made to both works. On the eastern breakwater, which also serves as a wharf for the landing and loading of general merchandise, coal, lumber, &c., the shoreward 30 feet was rebuilt on the south side 6 logs high and on the north side 3 logs high, including floor-stringers and flooring; 22 feet in length of

## SESSIONAL PAPER No. 19

the new covering was laid on the outer end, and a number of new fenders were bolted into position. On the western breakwater, a re-enforcing block was built on the south side of the outer end, 97 feet long, 11 feet wide and 12 to 14 feet high, or to a height of about 10 feet below the floor of the work; a re-enforcing block was also begun along the whole length of the L, 70 feet in length and from 10 to 12 feet wide. To obviate settlement, due to soft bottom, and the eating away of the bottom logs by the limnoria, it was built on 147 piles, driven to hard bottom and cut off level with the beach. The inner or north side of the shoreward end was also strengthened and rebuilt. In 1897-8, further repairs and renewals to the breakwater were made, the re-enforcing block along the L of the western breakwater was completed to the full height of the work, and the inner face of the outer end was renewed. The buttress on the outer side was extended shorewards a length of 122 feet. On the end of the eastern breakwater the T was rebuilt 50 feet long, 20 feet wide, and built on 21 piles driven to hard bottom and cut off level with the beach. Various miscellaneous repairs were also effected.

In 1898-9, thorough and extensive repairs to the western breakwater were completed, and 60 feet long on the inner face was close-sheathed, the buttress on the seaward side, 140 feet long was finished and several vacant spaces in the shoreward end were filled with ballast.

In 1899-1900, the re-enforcing buttress on the outer end and seaward face of the breakwater, 96 feet long, 10 to 12 feet wide, to the full height of the work, was rebuilt. The lower 12 feet of this work, and the outer end of the work, were also sheathed with 4-inch creosoted plank as a protection against the limnoria.

In 1900-01, a piece of buttress on the seaward side of the breakwater, 90 feet long, 19 to 20 feet high, and from 10 to 11 feet wide, adjoining shorewards the piece 96 feet long which was built the previous year, was constructed. The outer face of the new piece of buttress was also sheathed 12 feet high with creosoted 4-inch plank, as a protection against the limnoria.

In 1901-02, the sum of \$299.44 was expended in close-sheathing with 5-inch plank a length of 110 feet of the shore end of the seaward face of the breakwater from which the old sheathing had been stripped away by heavy seas earlier in the year.

In 1903-04, the sum of \$1,503.25, was expended in raising to the full height of the breakwater, the buttress on the seaward side for a length of 65 feet and a width of 12 feet, and height of 14 feet. Also the taking down, rebuilding of an equal length 65 feet, to a height of 8 feet, of the main portion of the breakwater that was very much decayed.

The total expenditure to June 30, 1904, was \$27,005.01, including a refund of \$1,971.66 to the provincial government in 1887-88. This work was transferred to the department of Marine and Fisheries on June 22, 1885.

Spring tides rise 18 feet and neaps 15 feet.

## POULAMOND WHARF.

Poulamond, Richmond county, is situated on Madame island, on the southern side of the Lennox passage, a strait separating Madame from Cape Breton islands, and connecting St. Peter's bay with the Strait of Canso; and is about one mile to the westward of D'Escousse.

During 1892-3-4, a wharf was constructed consisting of a stone approach 315 feet in length and 16 feet wide, a stone embankment 107 feet long and 20 feet wide on top, with sides and outer end sloping  $1\frac{1}{2}$  to 1, and a creosoted pile extension 120 feet in length and 22 feet wide with an 'L' 21 by 29 feet, at the outer end. The approach to the wharf was deepened by dredging.

During 1895-6, a landing slip was cut on the western side of the outer end of the pile extension to facilitate landing and shipping during low water.



4-5 EDWARD VII., A. 1905

The sum of \$334.97 was expended during the fiscal year 1903-04, in renewing the covering, the cap, and eight fender piles on the pilework; in raising, grading and draining the approach, and building a small warehouse on the L.

The depth at the outer end of the wharf is nine feet at low water spring tides which rise 6 feet.

Total expenditure on this work up to June 30, 1904, exclusive of the cost of dredging is, \$6,085.15.

## PROSPECT.

Prospect, Halifax county, is a settlement of some three or four hundred people, situated on the Atlantic coast, 15½ miles in an airline southwest from Halifax, 21 miles by public road and about the same distance by water. The land in the neighbourhood being very sterile and rocky, and quite unsuited to agriculture, the inhabitants are wholly dependent for a livelihood upon fishing, which is an important industry, large quantities of lobster, cod, haddock, mackerel, herring and other fish being caught and exported. The cove, around which the village is built, and which carries a depth of from 10 to 15 feet of water at low water ordinary spring tides, is a quarter of a mile long and from two to three hundred feet wide. Its mouth is well protected from the open sea by Saul's island and by numerous reefs and shoals, so that heavy seas cannot enter. Around the cove are numerous small, flimsy wharfs and stages, for the landing and curing of fish, but not only is there insufficient depth of water at these stages, but, belonging to private individuals, merchants and the general public importing flour, coal and other merchandise, have in the past been obliged to unload their goods from schooners lying at anchor in the harbour, into boats and get them ashore as best they could.

In the fiscal year 1902-03 the department expended the sum of \$767.26 in the construction of a small wharf of pilework.

In 1903-04, the department expended the sum of \$453.62 in completing the work. It consists of a pile-wharf, 61 feet long by 25 feet wide with an 'L' giving a face length of 55 feet. At the outer end, which is 18 feet high, there is a depth of about 10 feet of water at low water ordinary.

Spring tides rise 6 feet, neaps 5 feet.

## RAGGED HEAD.

Ragged Head, Guysboro county, on the north side of Chedabucto bay, 6 miles east of Guysboro harbour, is a triangular sheet of water with an area of about 180 acres and a depth of from 2 to 5 fathoms. It is inclosed by single beaches, through which there is a narrow channel on the western side of Ragged Head.

During the years 1878-83, the channel was improved and protection works, consisting of 110 feet of cribwork and 428 feet of brush and stone work, were constructed on the southern side. In 1899-1900 and 1900-01 small amounts were expended in repairing the cribwork and in deepening and re-opening the channel.

In 1902-03, the sum of \$1,000 was applied in constructing a cribwork block 49 feet in length, 16 feet in width on top, and 11 feet in height, in extension of the channel protection work and in re-opening the channel.

During the fiscal year ended June 30, 1904, the sum of \$200 was expended in improving the channel by hand dredging.

The total expenditure to June 30, 1904 was \$6,344.97.

The surface of the pond is 3 feet higher at low water inside than low water outside; consequently there is a fall at low water of 3 feet in the length of the channel (600 feet). The depth in the channel at low water is about 3 feet, except near the entrance, where it is about 1 foot.



## SESSIONAL PAPER No. 19

## RED HEAD.

Red Head, Shelburne county, is situated about two miles west of Roseway and twelve miles south-west of Shelburne. It is a fishing station of some considerable importance.

At this place a beach of shingle about half mile in length separates a small lake from the sea-shore. In former years, a channel existed across the beach, through which the fishermen could enter the lake for protection and shelter.

About the year 1840, the provincial government undertook to prevent this channel from being filled up, and built a small groin of stone-filled cribwork along the western side of the channel from the lake to within 40 feet of low water ordinary spring tides outside. This work was not successful and about the year 1855 the channel was entirely closed.

Examinations and surveys of this place, showed it to be necessary, in order to effect a permanent haven, that the channel should be reopened, and cribwork protection walls be constructed along both sides of the channel, for its entire length.

During the fiscal year 1899-1900 this, together with the excavation necessary for a proper channel, was performed at an expenditure of \$2,097.87.

The work done consisted of, the excavation for the channel 306 feet long 20 feet wide and from 4 to 8 feet deep, and the construction of two cribwork walls. The western wall is 316 feet in length, 10 feet wide on top and had an average height of 9 feet, whilst the eastern wall is 266 feet in length 10 feet wide on top, and of an average height of 9 feet.

During the fiscal year 1903-04, the sum of \$400 was expended, in extending the western wall an additional length of 60 feet. This addition was constructed of a similar kind of cribwork as the former works, it is 10 feet wide on top, 12 at the bottom and has a height of 10 feet. This extension was found necessary owing to the beach having shifted somewhat and the channel was fast becoming filled up. About 100 cubic yards of small stones and gravel were removed from the channel. Spring tides rise 7 feet, neap 5½.

## SANDY COVE.

Sandy Cove, Digby county, is a thrifty and beautifully situated fishing and farming settlement, of some 400 people, situated on Digby Neck, nineteen miles south-west of Digby town.

On February 12, 1903, a contract in the sum of \$13,000, was awarded by the department, for the construction of a breakwater in the cove, on the eastern, or Bay of Fundy side of the neck, with the object of affording some much needed shelter to the fishing fleet. On June 30, 1904, the value of the work done was \$9,232.

The breakwater, when completed, will be 211 feet long, 30 feet wide on top and 31 feet high at the outer end where, at high water ordinary spring tides there will be about 27 feet of water. The work is designed to be of solidly built round-leg cribwork, the lower portion, up to 5 feet above low water ordinary spring tides, being of creosoted timber to resist the attacks of the limnoria, which are here prevalent and destructive.

Spring tides rise 23 feet, neaps 19 feet.

## SCOTT'S BAY.

Scott's Bay, King's county, is on the south side of Minas channel, Bay of Fundy, between Cape Split and Baxter's harbour. The population of the settlement, within a radius of a couple of miles is about 500.

In 1878-79 the department built a block of cribwork 50 feet long, 30 feet wide and about 20 feet high, connected with the shore by a double row of close-piling, 210 feet

4-5 EDWARD VII., A. 1905

long, from the south-east corner of the block; the cribwork was built of close-faced work, well fendered and ballasted. The work was located on the west side of Jess creek, and formed a harbour or shelter for vessels during south-west storms.

As it had no floor, much of the ballast has been removed, presumably for ballasting schooners. Both the block and close-piling are more or less dilapidated; 30 feet in length of the close-piling and the upper 15 feet in height of the block being totally destroyed. The expenditure on this block and the close-pile work by the department in 1867-1882 was \$3,000.

In 1900-01 the department expended \$500 in building two blocks of cribwork, one on either side of the mouth of the creek. The northern block is 115 feet long, 15 feet high and 19 feet wide; also in extending the south breakwater by a block 75 feet long, 10 to 12 feet high and 12 feet wide. Some minor repairs were also made to the older portions of the northern breakwater.

In 1903-04 the department expended the sum of \$1,346.52 in further improvements. The work done consists of the construction of a new block of cribwork in extension of that built in 1901-02, 57 feet long, 20 feet wide and from 16 to 21 feet high, also in raising to full height and finishing the new block on the south side of the creek begun in 1901-02.

On June 30, 1904, the work was not completely finished owing to the difficulty, in commencing work early in the season.

Spring tides rise about 48 feet, neaps 40 feet.

#### SHAG HARBOUR.

Shag Harbour, Shelburne county, is a scattered village of about 600 inhabitants, on the Atlantic coast, about 6 miles north-west of Barrington and about 45 miles south-east of the town of Yarmouth. The occupation of the people is chiefly fishing and but little farming. In the year 1899-1900, the department commenced the construction of a wharf at this place. The sum of \$1,950.93 was expended but the structure was not completed.

During the fiscal year 1903-04, the wharf was completed with an expenditure of \$337.63.

The wharf consists of a rock-bank approach, 53 feet in length, 25 feet wide on top and 10 feet high, the wharf proper is 221 feet in length, 20 feet wide, with an L or return 20 feet by 20 feet, the height at the outer end is from 19 to 20 feet. It is constructed of pile-trestle bents, 10 feet apart from centre to centre of piles, well braced, waled and fendered.

Spring tides rise here 10 feet, neaps 7.

#### SOUTH GUT.

South Gut, Victoria county, is the local name for the southern arm of the head of St. Ann's harbour, at the head of St. Ann's bay, on the eastern coast of Cape Breton island.

A wharf was constructed during 1890-91 on the southern side of South Gut, 198 feet in length and 20 feet wide, extending to  $6\frac{1}{2}$  feet at low water, and consisting of a shore abutment 48 feet long and of four 20-foot blocks, built of native timber cribwork with intervening spans  $17\frac{1}{2}$  feet in length.

In order to render the wharf accessible, at all times of tide, to the steamer which calls here twice a week on her trips from the Sydneys to the north shore, and at the same time to facilitate team traffic on the wharf, during the fiscal year 1902-03, an additional block, 20 by 40 feet was placed, 20 feet from the end of the wharf, and connected with it by a span. The depth of water at the outer end is now 8 feet at low water spring tides, which rise 6 feet.

During the fiscal year 1903-04, the covering, the cap and the fenders on the old wharf were renewed, and the approach was graded and gravelled, at a cost of \$493.21.

Total expenditure to June 30, 1904 was, \$3,999.27.

## SESSIONAL PAPER No. 19

## SOUTH INGONISH.

Ingonish Bay, Victoria county, is situated on the eastern coast of Cape Breton island, about midway between Sydney harbour and Cape North. It is divided into north and south bays by Middle Head, a narrow, rocky neck of land over 2 miles in length.

At the head of South bay there is an extensive lake, separated from the sea by a beach, through which there formerly existed but a shallow channel.

In 1873, works were undertaken by the department for the improvement of the channel. On their completion in 1876, there was a channel 200 feet in width, with a depth of nowhere less than 14 feet, at low water, and with its northern side protected by a pier 500 feet in length, thus giving vessels access to the lake, which has an area of about 400 acres and a great depth, and affords a safe and commodious harbour.

The pier, on which small sums were expended every year from 1876 to 1880, and large amounts in 1881 and 1882, sustained serious damage during heavy easterly gales in 1882 and was subsequently carried away down to below low water.

In 1886-87 an anchor and mooring buoy were placed in the harbour, near the entrance, and a beach protection work 58 feet in length and 20 feet in width was constructed on the northern side of the entrance, to prevent the sea from cutting away the end of the beach, and open up a channel between it and the remains of the old breakwater; during 1894-95, a breach at the back of the beach protection work was closed with a cribwork block 45 feet in length and 15 feet in width, and brush and stone placed at its sides.

In 1893-94 a public wharf was constructed on the northern side of, and near the entrance to the harbour, consisting of a block of cribwork  $31\frac{1}{2}$  feet wide on top and  $30\frac{1}{2}$  feet in length, with an approach of brush and stone, 45 feet in length and 20 feet wide. The depth of water at the outer end at extreme low water is  $8\frac{1}{2}$  feet.

During a severe gale, accompanied by an extraordinary high tide, on February 4, 1895, the beach separating the harbour from the bay was swept from end to end. Nearly all the buildings and private wharfs were destroyed and carried away, but the public works were not disturbed, with the exception of some settlement in the slope on the seaward side of the beach protection work.

Since the destruction of the breakwater in 1882, the channel has been gradually contracting and getting shoaler but it is still some 70 feet in width and has a depth of 12 feet at low water. Spring tides rise 4 feet.

On February 28, 1903, a contract was entered into for the sum of \$2,485, for the construction of a wharf on the southern side of the harbour, near its entrance. The work was commenced on September 4, and brought to a satisfactory completion on October 21, 1903.

The new wharf is 160 feet in length, extending to 16 feet at low water, and consists of a shore abutment and four cribwork blocks, with intervening spans. The abutment and the three inner blocks are 16 feet wide, and the outer block, which forms the head, 30 feet by 30 feet, all are constructed of round timber, laid open-faced, and the outer block has a creosoted timber substructure and is close-sheathed on all outer faces.

The total expenditure to June 30, 1904, for work at this place, not including cost of new wharf, was \$93,696.31. The expenditure during 1903-04, was \$2,590.

## SPRY BAY.

Spry Bay, Halifax county, is a thriving fishing and farming settlement of about 1,000 inhabitants, situated about seventy miles east of Halifax city and eight miles west of Sheet Harbour. It contains four stores, two lobster packing factories, hotel

4-5 EDWARD VII., A. 1905

and telegraph. The harbour is free from ice all the year round, and, during the winter, freight for Sheet Harbour and points east, has to be landed here on account of the other adjacent harbours being closed by ice. There is a considerable trade all the year round. Hitherto, owing to the absence of a suitable landing pier, the weekly steamer has been obliged to tie up at a flimsy and inconvenient landing, which, owing to shallow water, is approached with difficulty.

In 1903-04, the sum of \$508.94 was expended in the purchase and delivery of the timber preparatory to the construction of a suitable wharf.

Spring tides rise 6 feet, neaps 5 feet.

#### SWIM'S POINT.

Swim's Point, Shelburne county, which is practically a continuation of Clark's harbour, is situated, one and one half miles east of the last named place.

The wharf at this place consists of a stone approach, 35 feet in length, 25 feet wide on top with a graded covering of 6 inches of coarse gravel, and 178 feet in length of alternate block and spans. The wharf is 20 feet wide except the last 25 feet of its length which is 40 feet wide, forming an L at the outer end. The height of the outer end of the work is 25 feet, the flooring being 4 feet above high water ordinary spring tides.

The people of Clark's harbour have been desiring the ss. 'Senlac,' which plies between St. John and Halifax and intermediate ports of importance, to call here; but the wharf was too small to accommodate such sized steamers.

During the fiscal year 1903-04, the sum of \$1,214.56 was expended for the construction of part of an additional length of 25 feet to the existing wharf. On June 30, about two-thirds of the new work had been built and the necessary materials to complete it were on hand. The new work when completed will be 40 feet wide and 25 feet long with a height at the outer end of 29 feet. It is built of cribwork similar in character to the former work. The depth of water at the outer end will be 4 feet greater than formerly. Spring tides rise here 10 feet, neaps 7 feet.

#### SYDNEY QUARANTINE STATION.

The Quarantine Station in Sydney harbour is on the southern arm, near Keating Point and about three-fourths of a mile from Point Edward, at the extremity of land lying between the south and west arms.

The wharf built by the Department of Marine and Fisheries and repaired and extended in 1903-04, is a block and span structure, extending 148 feet to 8 feet at low water. Spring tides rise 5 feet.

During the fiscal year 1903-04, the sum of \$1,566.04 was expended in procuring creosoted timber and other materials for the repairs and extension of the wharf.

#### TANCOOK.

Big Tancook, Lunenburg county, is the largest of a host of small islands in Mahone bay, on the coast of Lunenburg county. It is about  $2\frac{1}{2}$  miles in extreme length, north and south, by about a mile in width, east and west. It is nine miles north-east of the town of Lunenburg; the same distance south-east from Chester and about  $2\frac{1}{2}$  miles south-west of the Aspotogon peninsula, which is the nearest mainland. The island has a population of about 600 people, for the most part dependent on fishing, but doing a considerable amount of farming in the way of raising early vegetables.

The breakwater, which is situated on the north-western side of a large cove, on the northern end of the island, was built in 1873, at the joint expense of the Department of Public Works and the provincial government, each having expended \$2,000. It is 200 feet long with a spur at the outer end, having a face length of 95 feet, and is

## SESSIONAL PAPER No. 19

built partly of piles and partly of cribwork, the first 165 feet being of cribwork, and the remainder including the spur or L of piles. In 1887-88, repairs and renewals were effected. 1899-1900, thorough repairs and renewals to the cribwork portion of the structure were made.

In 1901-02, the department expended the sum of \$936.48 in completing the repairs to the wharf begun last year. The work done consisted of the renewal of the pilework in the outer portion of the wharf and the reflooring of the whole outer end of the L.

In 1903-04, the sum of \$195.99 was expended in driving 35 new piles to replace those broken by ice the previous winter, the placing and bolting of 47 running feet of waling, 55 feet in length of new guard timbers, and sundry repairs to planking.

## TENECAPE.

Tenecape is a scattered farming district on the south shore of the Basin of Minas, Hants county, situated about half way between Walton and Noel, or about 6 miles distant from each. The population of the place within a radius of a couple of miles is about 200 people. A small lumbering industry ships about 300,000 feet of lumber annually. A small amount of fishing is also done. The nearest railway station is distant about 13 miles. Most of the local trade is carried on by water. The nearest wharf is about 6 miles distant, and hitherto, vessels loading and discharging had to ground on the mud flats at the mouth of the river, where they were much exposed to seas from a northern direction. On May 17, 1904, the department awarded a contract in the sum of \$8,370, for the construction of a suitable breakwater to serve both as a landing pier and a shelter. On June 30, 1904, work to the value of \$2,019.48 had been accomplished.

Spring tides rise about  $50\frac{1}{2}$  feet, neaps  $43\frac{1}{2}$ .

## TIVERTON.

Tiverton, Digby county, is a village of some 400 people mostly engaged in fishing, but doing also some little farming, situated on the west side of Petit Passage, separating the main line of Digby Neck from Long island. It is about 30 miles southwest of Digby town, and 10 miles from Sandy cove.

On February 12, 1903, a contract (No. 4543) in the sum of \$17,000 was awarded by the department for the construction of a breakwater to afford shelter to the fishing fleet. The work, which was completed in January, 1904, is 281 feet long, 30 feet wide on top, and at the outer end 33 feet high, where at high water ordinary spring tides, there is about 29 feet of water. The whole is substantially built of round-log cribwork, the lower portion up to 5 feet above low water ordinary spring tides is of creosoted timber to resist the attacks of the limnoria.

The sum of \$119, was paid to the contractors on 'extras,' viz., \$50 for carrying floor of the breakwater out over the lower end of the inclined slip, and \$60 for treating the upper timbers with creosote.

Spring tides rise 21 feet.

At the end of the fiscal year, the sum of \$15,308 had been paid to the contractor.

## TRACADIE.

Tracadie Harbour, Antigonish county, is on the southern shore of St. George's bay, 12 miles east from the entrance into Antigonish Harbour, and 11 miles to the westward from the northern entrance to the Strait of Canso. It is separated from the bay by a series of islands and connecting beaches of sand and gravel, and its entrance was formerly to the westward of Delorey island, by a narrow and crooked channel with 2 feet at low water; but in 1863 the provincial government opened a passage

4-5 EDWARD VII., A. 1905

by dredging at the eastern end of the harbour, through a beach which connected the mainland with Delorey island and constructed a breakwater on its eastern side.

During 1874-75 the department repaired and extended the breakwater, and constructed a retaining wall of cribwork to the southward of it to prevent erosion of the bank. Slight repairs were made from time to time up to 1884-85, when the breakwater was repaired and strengthened by close-piling, and the retaining wall, which had been destroyed, was reconstructed.

The breakwater, weakened by the ravage of the teredo, was badly damaged in 1889, and in the following year, the whole of it, excepting a portion of the south face, 67 feet in length, was destroyed. During 1892-93, 50 feet of the south face of the remaining portion was repaired and strengthened by close-piling.

The destruction in 1890, of the greater portion of the breakwater, involved the shifting of the channel at the entrance (originally carrying 6 feet at low water) 500 feet to the westward and the wasting away of the beach, and consequent loss of land to the eastward by erosion.

To prevent further loss of land and to improve and protect the entrance, during 1898-99-1900, the remaining portion of the old breakwater was repaired and strengthened and a side extension 100 feet in length, consisting of round timber cribwork, with creosoted timber substructure, and close-sheathed on the seaward faces, was constructed.

During 1901-02-03, the retaining wall was re-ballasted, and a cribwork 'spur,' 40 feet long and 16 feet wide on top, close-sheathed on all outer faces, was built at its southern end, to deflect the tidal currents off the bank into the channel.

The sum of \$381.64 was expended during the year 1902-03 in raising, ballasting and covering 52 feet of the shore end of the breakwater, in covering the retaining wall 187 feet long and 10 feet wide with spruce poles, and in sheathing the outer face of the retaining wall for a distance of 30 feet from its junction with the 'spur.'

The reconstruction of the breakwater has had the effect of restoring the beach to the eastward, nearly to its original condition, and of deepening the channel at the entrance.

During the fiscal year ended June 30, 1904, the sum of \$425.28 was expended in the reconstruction of the inshore end of the breakwater for a distance of 45 feet, in close-sheathing the new work and 15 feet of the old work adjoining it, and in placing brush and stone in the angle formed by the inner end of the work and the clay bank, to prevent the sea from cutting through.

Total expenditure to June 30, 1904, including \$1,228.69 refunded to provincial government, and cost of dredging is \$25,364.95.

#### UPPER PORT LA TOUR.

Upper Port La Tour, Shelburne county, is a small village of about 300 inhabitants, situate two miles north-east of Port La Tour proper.

In the fiscal year 1898-99, the department commenced the construction of a wharf which was completed in the next fiscal year. The total amount expended upon this work in these two years was \$2,699.85.

The wharf was 273 feet long and 20 feet wide. It was made up of a rock-bank approach 38 feet long and 25 feet wide, eight 18-foot cribwork blocks and seven 13-foot spans, with a common width of 20 feet and a height at the outer end of 18 feet. The cribwork blocks are built of round-logs, filled to the underside of the floor stringers with heavy stone ballast, well fastened and heavily fendered.

Since its construction, this wharf has been much used, and as several coasting steamers called there, it was deemed necessary to extend the wharf to deeper water so that it could be approached by these steamers at practically any time of tide.

## SESSIONAL PAPER No. 19

During the fiscal year 1903-04, the sum of \$800 was expended in the construction of an extension to the wharf, 37 feet long, consisting of a span of 15 feet and a block 22 feet in length by 20 feet wide, also a span and a block of the same dimensions forming an L at the outer end, thus making the outer face 57 feet long. The crib is of the same nature as that previously built.

The height of the work at its outer end is 22 feet.

## WASHABUCK CENTRE.

Washabuck, Victoria county, is a district on the south side of the eastern end of St. Patrick's channel, an arm of the Little Bras d'Or lake, and extends about six miles along the shore. As the name implies, Washabuck Centre is situated near the centre of the district.

In order to facilitate the shipment of agricultural produce and cattle, from the district, on April 6, 1903, a contract was entered into for the sum of \$5,860, for the construction of a wharf at this place.

The work of construction was commenced on July 1, 1903, and was brought to a satisfactory completion on September 9, following. It consists of a block and span wharf, 218 feet in length, extending to 12 feet at low water, 20 feet wide, with an L at the outer end 20 by 20 feet; and of a road to connect it with the public road, 102 feet long, on the centre line, and 20 feet wide, fenced in on each side. The blocks and the shore abutment are constructed of round timber cribwork, laid open-faced, with creosoted timber substructure, and the two outer blocks are protected by close-sheathing on their outer faces.

Expenditure for the fiscal year 1903-04, was \$6,055.

## WEDGE POINT.

Wedge Point is the southern extremity of the peninsula called 'Tusket Wedge,' three miles long, north and south, by half a mile to a mile wide, east and west, situated some ten miles south-east from Yarmouth, the county town. The population of the peninsula comprises some 500 people, the majority being engaged in, and more or less dependent upon, the fisheries. On the east side of the peninsula there was no shelter or protection whatever for the fishermen, of whom there are a considerable number, and they were obliged to keep their boats in Goose bay, on the western side.

In 1902-3, the sum of \$1,000 was expended in commencing the construction of a breakwater. The work was 119 feet long, 19 feet wide and from 5 to 12 feet high; it is substantially built of round-log cribwork, well-fendered and ballasted and close-sheathed on the seaward side.

In 1903-04, the sum of \$1,701.61 was expended in building an extension to the breakwater built in 1902-03. The new block is 100 feet long, 19 feet wide on top and from 12 to 15 feet high, well and substantially built of cribwork, sheathed on the seaward side and filled solid with stone.

Total expenditure by the department to date was \$2,701.61.

Spring tides rise 12 feet; neaps, 10 feet.

## WEST BACCARO.

West Baccaro, Shelburne county, is about three miles west of the village of Port La Tour, and has a population of about 400, mostly engaged in the fishing industry. It is one of the roughest spots on the coast of Nova Scotia. In the past the fishermen have pursued a very hazardous calling, and have been handicapped by the lack of a safe mooring harbour for their boats, often having to stand on the shore and watch their boats and other property being destroyed by the storms. To lessen the dangers of their calling and obviate further loss, the department decided to convert a pond



4-5 EDWARD VII., A. 1905

partly available at low tide into a boat harbour by the construction of protection works around it on its exposed sides and excavating a channel on the inner side, to be protected so as to prevent its filling in again.

With this object in view, the sum of \$1,999.99 was expended in the year 1902-03.

During the fiscal year 1903-04 the work was completed with an additional expenditure of \$3,500.

The work consists of a cribwork protection on a length of 1,055 feet, 8 feet wide on top and from  $4\frac{1}{2}$  to 12 feet high. It is built of round logs, filled with stone, double fendered every 10 feet. A channel was also made from inside the pond to low water ordinary spring tides outside, a distance of 225 feet, on a width of 25 feet and a depth of 3 feet.

Spring tides rise 9 feet, and neaps, 7 feet.

#### WEST BAY (SOUTH).

West Bay (south), is situated on the south side of West bay, the south-western arm of the Great Bras d'Or lake.

'The Points,' so called from the number of headlands projecting into the south side of West Bay, is a scattered settlement, extending along the shore for a distance of four miles, and the centre of the settlement is about twelve miles eastwardly from West Bay port, at the head of the bay, and fifteen miles northerly from St. Peter's canal.

A contract was entered into on September 1, 1903, for \$2,980 for the construction of a wharf at 'The Points,' it is to be 250 feet long, 20 feet wide, with the outer end in 12 feet at low water.

Work was commenced on June 13, 1904, and up to the end of the fiscal year, all the bearing and mooring piles were driven and capped, the outside floor-stringers were placed and secured, the outer twelve bents were braced, and the cribwork abutment was placed and partly ballasted.

Expenditure, \$1,747.98.

The work was completed and accepted on July 26, 1904.

#### WESTERN HEAD.

Western Head, Queen's county, is a fishing settlement, situated on the south side of Liverpool bay, about four miles south of Liverpool.

In 1887, the department began the construction of a stone breakwater, and during the following year completed the same. The breakwater was constructed entirely of large stones, quarried for the purpose; a portion of the work, from low water mark, being built of selected stone, firmly bolted together with iron dogs. The whole work at that time was 190 feet in length and 40 feet wide on top.

Soon after the breakwater was completed, 100 feet in length of the outer end was destroyed, and in the following fiscal year, 1889-90, the sum of \$5,000 was expended in rebuilding it. The projecting points of the reef were cut away, a bed was prepared for a foundation course, which was built down to the bed-rock, and the interstices were filled in with Portland cement concrete. Each succeeding course was laid in a similar manner. The top of the breakwater for 5 feet above high water and the surface were finished smooth. The total length of the breakwater built in that year was 106 feet, making the breakwater 196 feet in length over all.

During the fiscal year 1898-99, the sum of \$965 was expended in repairing this work. The older portion of the breakwater, 90 feet in length, 29 feet wide, with an average height of 8 feet, was practically rebuilt, and also material repairs were made to the newer work built in 1889-90.

During the year 1902-03, the extension of this work was begun and the sum of \$2,960.05 was expended. During the fiscal year 1903-04 an additional sum of \$3,653.85



## SESSIONAL PAPER No. 19

was expended in completing the extension, making a total expenditure in the two years of \$6,614.20.

The extension is built of very large stone for a thickness of 6 feet on both sides, and slightly smaller ones in the centre, all laid in cement. It is 97 feet in length, averages 13 feet in height and is 23 feet wide on top and 28 on the bottom. Spring tides rise here 7 feet, neaps 5 feet.

## WEST PUBNICO.

West Pubnico Harbour, Yarmouth county, is situated some 30 miles south-west of Yarmouth; it is about 8 miles long from mouth to head, lying due north and south, and from three-quarters to a mile and a half wide.

On the west side of the harbour and about 3 miles above its mouth, a wharf was built by the department in 1885-6 to 1886-7. The work consists of a stone and gravel causeway, 285 feet long, followed by a wharf 230 feet long, of pile bents. The bank is 25 feet wide by an average height of 4 to 5 feet; the wharf is of the same width and from 10 to 14 feet high. At low water ordinary spring tides the mud flats are bare for over 1,000 feet beyond the end of the wharf.

In 1900-01 the sum of \$2,025 was expended in repairs and extensions, the work done being as follows:—

(a) The raising and gravelling of the stone approach, 290 feet in length; many of the top stones, which had been displaced, were renewed, and from 6 to 18 inches of fresh gravel was laid.

(b) The thorough repair of the older portion of the work, comprising new fender-piles, guard timbers and transverse bracing. The whole of the floor was taken up and relaid, about one-half of it with new plank.

(c) The construction of an extension 167 feet long of equal width and similar construction with the old work, viz.: 25 feet wide and of pile-bents. The outer end of the work, which is all of pile-work, is now 15 feet high, carrying a depth of water of about 12 feet at high water ordinary spring tides.

(d) The placing of three dolphins, consisting of 4 piles each, from 500 to 1,200 feet distant from the wharf to mark the positions of rocky ledges. The piles forming each dolphin are strongly chained and bolted together at the top and painted.

The total length of the pile-work is now 397 feet.

In 1903-04 the sum of \$98.12 was expended in lowering back into place about 50 feet in length of the shore end.

Spring tides rise 12 feet, neaps 10 feet.

Total expenditure to June 30, 1904, was \$4,371.75.

## WEST WOODS HARBOUR.

West Woods Harbour, Shelburne county, is a small village of about 200 people situated about 2 miles direct west of Middle Woods Harbour. The people here had no means of landing their goods and had to drive about 6 or 7 miles to the nearest shipping place for their provisions and other necessities. During the fiscal year 1903-04, the department expended the sum of \$686.93 in partially constructing a wharf there, which would have been completed but for the difficulties in procuring materials and the high cost of transportation of same.

When completed the wharf will consist of a rock-bank approach 18 feet in length, two cribwork blocks each 20 feet long and two spans of 15 feet each, making a total length of 98 feet. The rock-bank is 24 feet wide, and 9 feet high at the outer end and the cribwork is 20 feet wide and 16 feet high, at the outer end. The work is completed with the exception of about 6 feet in height of the outer block and the putting in position of the top of the outer 35 feet in length of the work. When completed

4-5 EDWARD VII., A. 1905

the outer end of the wharf will stand on the edge of the channel and will be easy of approach both by land and water. Spring tides rise here 10 feet and neaps 7 feet.

## WHITE HAVEN.

White Haven, Guysboro' county, one of the finest harbours in Nova Scotia is on the south or Atlantic coast, fourteen miles to the westward of Cape Canso.

In 1854, the residents, with some aid from the provincial government, undertook the construction of a canal for boats through a low and narrow isthmus between Marshall Cove, three miles within the entrance, and Witch Cove, at the eastern extremity of Tor bay. On the completion of improvements made in 1876, it was 620 feet in length and from 10 to 12 feet in width; the bottom was about one foot above extreme low water, or 4 feet 6 inches below the level of extreme high water. Prior to 1884 the walls had become dilapidated, the southern entrance was blocked with sand, and the channel inside filled with sediment and washing from the slope.

In 1894-95 repairs and improvements were made by the department with the object of obtaining ultimately a uniform depth at extreme low water of one foot and a width between retaining walls of 12 feet. The repairs and improvements effected included the removal of 160 feet of old retaining wall on each side at the south end, and the construction of walls 10 feet wide on top, of which 20 feet at the outer end on each side are of cribwork, and the remaining 140 feet of brush and stonework; temporary repairs to the retaining walls on both sides from 160 to 270 feet from the south end, and on the east side from 328 feet to 480 feet from the south end; the construction of new walls on each side from 480 to 500 feet from the south end as foundations for bridge abutments, built by the municipality; the reconstruction of 100 feet of wall on the west side 500 to 600 feet from the south end; the construction of 141 feet of temporary wall on each side (600 to 741 feet from the south end), and deepening from end to end to within 3 to 6 inches of extreme low water.

In 1900-01 and 1901-02 the sum of \$2,686.53 was expended in continuing the repairs and improvements undertaken in 1894-5. The work performed comprised the construction of 137 feet of brush and stone retaining wall on each side, 160 to 297 feet from the south end, the removal of the old retaining wall on the west side, 528 to 740 feet from the south end; and on the east side 588 to 740 feet from the south end; the construction of a new retaining wall 583 feet in length on each side 167 to 750 feet from the south end and deepening between the retaining walls to about 1 foot at low water.

In 1902-03 the sum of \$799.25 was expended in constructing 80 feet of brush and stonework on each side 750 to 830 feet from the south end, thus completing the work undertaken, with the exception of a cribwork retaining wall 20 feet in length, on each side at the north end.

During the fiscal year ended June 30, 1904, the sum of \$500.75 was expended in nearly completing the cribwork retaining walls at the north end.

The total expenditure to June 30, 1904, including a refund of \$876.42 to the provincial government was, \$6,317.98.

## WHITE'S COVE.

White's Cove, Digby county, is a settlement of some 200 or 300 people, engaged in fishing and farming, situated on the shore of St. Mary's bay, about five miles south of Weymouth. In 1903-04 the department expended \$1,839.06 in extending and repairing an ancient wharf of cribwork. The new block is 38 feet square, and from 18 to 20 feet high, substantially built of round-log cribwork. The next 100 feet in length shorewards was also taken down and rebuilt and the whole wharf, 260 feet long, was levelled up with gravel.

## SESSIONAL PAPER No. 19

## WINDSOR.

Windsor, the county town of Hants, with a population of about 4,500, is an important town situated at the head of the estuary of the River Avon, on the Dominion Atlantic Railway, 46 miles north-west of Halifax. The shipping registered at the port for the year ending 1896, amounted to 131,000 tons. In the neighbourhood are extensive quarries of gypsum, of which about 120,000 tons are annually shipped to the United States. Some two or three million feet B.M. of lumber, are annually exported by water. Up to a dozen years ago the wharfs of the town were comparatively free from mud, and at high water large vessels could lie alongside and discharge or load. In the last few years, owing partly, no doubt to the construction of the new highway bridge, the mud has accumulated in front of the wharfs to such an extent that it is only on an extreme high tide that moderate sized vessels can approach or leave the wharfs.

With the object of scouring away the accumulated mud, the department in 1897-98 began the construction of a training weir, extending down stream from the corner of the Falmouth abutment of the road bridge at an angle of 45 degrees with the bridge. The weir is constructed of brush mattresses at the bottom, with sufficient stone to keep them in place, and with cribwork on top of them. The thickness of the brush mattresses, with their load of stone, is from 2 to 4 feet, the average depth of the main or under crib is from 5 to 8 feet, and the uniform height of the 'A'-shaped top crib is 7 feet; the sloping sides of the work are sheeted with 3-inch hardwood plank, and the crest is covered with 6 x 6 x  $\frac{3}{4}$ -inch steel angle securely bolted. The work is built on shifting quicksands, and owing to the great rise and fall of the tides (about 40 feet) and the great velocity of the current at ebb and flood tide, it was constructed under great and peculiar difficulties.

In the fiscal year ending June 30, 1901, the sum of \$2,173.74 was expended in completing the work to its originally designed length of 600 feet.

In the fiscal year ending June 30, 1902, the department expended the sum of \$2,725.93 in extending the work a further distance of 100 feet and making repairs.

In 1903-04 the sum of \$97.71 was expended in replacing and building a small quantity of the hardwood sheathing on the outer end of the training weir that was torn off by ice in the previous winter.

Spring tides rise about 40 feet, neaps 36 feet.

## WOLFVILLE.

Wolfville, King's county, is a town of about 2,000 people, situated on the right bank and near the mouth of the Cornwallis river, which issues into the Basin of Minas at its south-west corner. It is an important station on the Dominion Atlantic Railway, half way between Annapolis and Halifax, 64 miles from Halifax, 66 from Annapolis, and 7 miles east of Kentville, the county town of King's.

In 1900-01 (contract dated May 12, 1900, work finished in November, 1900), the department, at a cost of \$6,360.50, built a public wharf on the right bank of the river, near its mouth, at a distance of about half a mile from the town. The approach consists of earthwork—an embankment 144 feet in length, 26 feet wide and of an average height of 5 feet. The wharf itself, which is substantially built of pilework, is 152 feet long, 36 feet wide, including an inclined slope on the south side 10 feet wide. It has an L on the outer end 82 feet long, giving a total face length on the river channel of 116 feet; the L is 40 feet wide, and from 48 to 49½ feet in height along the outer face, giving a depth of water at high water ordinary spring tides of about 47 feet. At low ordinary spring tides the river channel carries a depth of 4 to 6 feet of mostly fresh water.

4-5 EDWARD VII., A. 1905

In 1902-03, the channel of the river moved shorewards, owing to erosion, a distance of some 20 or 30 feet, causing the two outer rows of piles of the wharf to lose more than half their hold in the mud and sand. In consequence of this it became necessary to build cribwork in the spaces between the two outer rows of piles at the end of the L, and also on the opposite end of the wharf alongside the inclined slip. This mode of treatment being insufficient, and the scour continuing, it was decided to remove the outer 20 feet in width for the whole 118 feet in length of the wharf and rebuild it on the inner side of the L. The work was begun on October 1, 1903, and vigorously carried on until December 24, when, owing to the severity of the weather and the rapidly accumulating ice, operations were suspended.

The winter of 1903-04, was the severest known for a great many years. Ice formed in and around the piles of the wharf to a greater weight and thickness than had been known since the wharf was built. The floating power of the ice added to the reduced hold of the piles in the bottom from the erosion of the channel, caused the whole L to be lifted up by the exceptionally high tide of March 3, 1904, to a height of from 5 to 8 feet. A few days later, the whole outer portion of the wharf, including the L, was carried away and destroyed.

In 1903-04, the sum of \$1,768.89 was expended in the above alterations and improvements and after the destruction of the wharf, in saving such of the timber as was possible.

Spring tides rise 48 feet, neaps 40 feet.

#### YARMOUTH BAR.

Yarmouth, the county town of Yarmouth county, is situated at the south-western extremity of Nova Scotia. It is a thriving and prosperous town of nearly 7,000 inhabitants, and, next to Halifax, the largest and most important in Nova Scotia. It is the terminus of the Dominion Atlantic Railway, whose fine Clyde-built steamers make regular trips throughout the year to Boston. There are several important manufacturing in the place, but the leading business is shipping, of which a larger tonnage is owned here than in almost any locality in Canada.

At low water, Yarmouth harbour, in which spring tides rise 16, neaps 13 feet, consists largely of mud flats covered with eel grass. The harbour is formed by a succession of shingle or gravel beaches (called Stanwood beaches), aggregating about one mile in length, which connect the northern end of Cape Fourchu island, also about a mile long, with the southern end of Stoney Point, on the mainland, and separate the harbour from the Bay of Fundy.

In 1867, it was found that part of the beach between Cape Fourchu and Stoney Point was gradually wearing down, and unless this action was arrested the sea would eventually sweep away the beach and destroy the harbour. The government of Nova Scotia began the work of protecting the beach in 1867, constructing 200 feet of cribwork at Stoney Point. Between 1873 and 1875, the Public Works Department constructed the remaining 2,800 feet of protection work required to reach Cape Fourchu, and added buttresses or groynes to stop the movement of the gravel.

Between 1875 and 1878, the protection works, though substantially built of stone-filled cribwork and close piles on their seaward faces, had to be repaired and strengthened, the expense amounting to over \$25,000.

Between 1888 and 1896 no further works of repairs were undertaken on the beach protection, and it became dilapidated and decayed. Breaches were made through it by the sea in various places. During the year 1896-97, the sum of \$2,983.62 was expended in carrying on the most urgent works of repair, and in 1897-98, a further sum of \$3,234.51 was expended in continuing and completing these repairs. This last sum was applied in rebuilding a length of 50 feet at the eastern end of the protection work, and in constructing a groyne, projecting at right angles from the same end, for a dis-

## SESSIONAL PAPER No. 19

tance of 175 feet. The groyne is 25 feet wide and 11 feet high, substantially built of round-log, stone-filled cribwork. Its object was to protect the beach at the north-eastern end of the main cribwork protection, by accumulating the gravel and breaking the waves before they expended their force on the beach. It has admirably fulfilled its purpose, as gravel has accumulated at the junction of the groyne with the main work to a depth of over 14 feet.

In 1898-99, the sum of \$300 was expended in repairing a small but serious breach 25 feet long, in the bottom of the outer face of the beach protection work, and in covering with 3-inch hemlock plank a length of 430 feet of the top of the work, in order to prevent the ballast from being washed out by the waves.

In 1899-1900, the sum of \$970.27 was expended in repairing two or three small but dangerous breaches in the seaward face of the work, and in covering the top for a length of about 670 feet with 3-inch plank to prevent the sea from washing out the ballast.

In 1900-01, the sum of \$3,389.70 was expended in extensions and repairs, the individual expenditures on the work done being as follows:—

(a.) \$142.43 was expended in repairing and filling with ballast a length of 60 feet of the older portion of the work.

(b.) \$2,798.50 in extending the work 514 feet westerly; this new length was 8 feet wide, from 5 to 8 feet high, substantially built of round-log cribwork, sheathed on the seaward side, and covered on top with round spars well spiked on.

(c.) \$448.77 in rebuilding a length of 50 feet of the older portion of the work, near the eastern end, which was severely damaged by a heavy sea, November 9 and 10, 1900.

In 1902-03 the sum of \$120.94 was expended in a few petty and miscellaneous repairs to the beach protection work, the work done comprising the replacing of a few pieces of close-sheathing washed off by winter seas, the renewal of some flooring, and the respiking of loose portions.

In 1903-04 the sum of \$325.57 was expended in building a fence on both sides of the beach protection, 1,250 feet long, for the purpose of making it safe for horse traffic. A few minor repairs to the beach protection work were also made.

Spring tides rise 15 feet, neaps 12 feet.

## PRINCE EDWARD ISLAND.

## AITKEN'S SHORE PIER.

Aitken's Shore pier, King's county, is on the south side of the Montague river, opposite Georgetown. The pier was in former years quite an important place of shipment, and also used as landing for the ferry steamer plying between Georgetown and Lower Montague, since, however, the construction (about twenty years ago) of the new ferry landing half a mile east and lower down the river, and a private wharf a short distance west of it, the pier was not kept in repair and latterly had become a complete wreck, and useless for shipments. The great need of proper shipping and landing facilities in the locality having been represented to the Dominion government by the residents of the surrounding districts, the old pier was taken over from the local government and parliament made an appropriation of \$3,200 at the session of 1902 for the works of reconstruction required to place the pier in serviceable condition. Materials were got out during the winter of 1902-03 and construction began early in May. By June 30, 1903, the end of the fiscal year, a length of 167 feet of the shore end of the pier, 22½ feet wide, had been rebuilt the full height, an adjoining length of 80 feet, also 22½ feet wide, to within 1 foot of the top.

4-5 EDWARD VII., A. 1905

The expenditure during the fiscal year 1902-03 was \$2,163.99, which included the cost of much materials ready for use in the work.

During the fiscal year 1903-04, the old pier was completely restored over its whole length of 356 feet, and an extension 35 feet long, 30 feet wide was built in order to bring the outer end of the pier in a depth of 10 feet at low water, and 15 feet at high water spring tides.

At the bottom, the structure is formed of poles close laid lengthwise and crosswise, which are ballasted at intervals through pockets formed for the purpose. The top portion, from 3 to 4 feet in height, consists of walls of square timber secured by longitudinals and cross ties, the space thus inclosed being filled with ballast, on top of which a roadway is formed of broken stone and gravel; the sides and ends of the pier are fender-piled at 5 feet centres.

The pier has now a total length of 391 feet and is 20 feet wide for a length of 250 feet at the inner end; the remaining length of 141 feet is 30 feet wide.

The amount expended during the fiscal year 1903-04 was \$2,174.80, and the total cost of the work was \$4,338.79.

#### BAY VIEW.

Bay View Pier, Queen's county, is situated on the eastern side of, and near the mouth of the Hope river that enters New London harbour about  $3\frac{1}{2}$  miles south-east of the harbour entrance. The pier has a total length of 509 feet and 18 to 20 feet wide on a length of 409 feet outwards from the shore, thence increasing gradually to a width of 35 feet at the outer end, where a depth of 10 feet is formed at low water or  $14\frac{1}{2}$  feet at high water spring tides. The pier is not exposed to any heavy sea, but being too low the top clay and gravel road is exposed to being damaged by extreme high tides and storms.

During the fiscal year 1903-04, the sum of \$47.61 was expended in repairs to the roadway.

#### BEACH POINT.

Beach Point, King's county, is on the south side of the entrance into Murray harbour. From the 'Point' a sand spit extends in a westerly direction along the edge of the channel, for a distance of about a mile, and incloses between it and the shore a basin having a depth of from 3 to 5 feet at low water, which affords good shelter and anchorage for fishing boats. The sand spit or bar is dry at low water and has a width of about 500 feet. During the last fiscal year 1903-04, a cut was made through the bar by the use of 'mud diggers' worked from the ice; the channel so dredged is 575 feet in length, 10 feet in width, with an average depth of 5 feet; it has proved to be most satisfactory, and of great benefit to the fishermen of the locality. The cost of the work was \$334.49.

#### CASCUMPEC HARBOUR AND BAY.

Casumpece Harbour and Bay, Prince county, is on the northern coast of the island, its entrance is about 18 miles south of Cape North, and 20 miles southwesterly from the entrance of Richmond bay. The harbour and bay are connected by what is known as 'Casumpece Narrows,' a shallow stretch of water from a half to a mile in width, lying between the sand dunes and sand bars that extend about parallel with the shore of the island between the two harbours or bays.

Casumpece Harbour or Bay is of considerable extent, being from 3 to 4 miles in length and from a mile to 3 miles in width, with a good depth of water; its entrance is perfectly safe-sheltered in all winds. The bay is much used as a harbour of refuge by coasters and fishermen; at its head is situated the town of Alberton, the second in importance in the county, and one of the principal stations on the line of the



## SESSIONAL PAPER No. 19

Prince Edward Island Railway, which has a branch to a deep water wharf, with all necessary sidings, warehouses, &c., at the harbour front from where an extensive business is carried on during the season of shipment. This harbour, however, like all the others on the northern coast of the island, is obstructed by an outlying shifting sand bar situated about a mile off its entrance, between the beaches, and on which the usual greatest depth is about 10 feet at low water spring tides. This is at times somewhat reduced on account, it is said, of breaches occurring in the sand beaches; these openings known as 'New Harbour' and 'Goose Harbour' are situated about two and three miles east of the entrance of the harbour. Some three or four years ago, a further break occurred in the beach about a mile east of the entrance; in order to prevent further damage, this break was closed during the winter and spring of 1903, by building a dam composed of brush and stone in the bottom, with a cribwork top fully ballasted and fender-piled at 10 feet centres, on a length of 350 feet and 12 feet wide at top. Shortly after the completion of the work above described, a further break of considerable extent occurred at its northern end, it is doubtful that any good results can be obtained unless very extensive works are built.

During the spring of 1904, an additional length of 85 feet of dam was built at the north end of the work previously constructed and of the same design, at a cost of \$1,072.75.

## CHINA POINT.

China Point pier, Queen's county, is situated on the west side of the Orwell river, near its entrance into Orwell bay. A pier was originally built at this place by the local government, and came under the control of the Dominion government in 1884. It has a total length of 426 feet and consists of a shore abutment or approach, 140 feet long, six blocks with intervening spans, and a pier head fronting 72 feet on the channel, and having a width of 37 feet, with a depth of 15 feet at low water or 23 feet at high water spring tides. Being a very old structure, when assumed by the Dominion government, the pier head has since been rebuilt, and from time to time repairs to the inner portion were effected to keep it in passable condition.

During the last fiscal year, 1903-04, the sum of \$125.56 was expended in general repairs to the roadway; the work consisted in renewing eight span beams, replacing part of the planking on the pier-head and spans, and repairing the broken stone and gravel roadway on the shore abutment.

## COVE HEAD.

Cove Head, Queen's county, is on the north side of the island, about midway between Tracadie and Rustico harbours. Within its entrance, which at low water is about 250 feet wide, the harbour or bay has a length of about 4 miles, and a width of from half a mile to a mile; it receives the waters of Black river, and Auld's, Mill and McCallum's creeks. It is navigable over the greater portion of its extent for small vessels and boats. The depth of water on the outer bar, however, is only from  $3\frac{1}{2}$  to 4 feet at low water or of from  $7\frac{1}{2}$  to 8 feet at high water spring tides. The harbour proper commences immediately inward of the entrance and extends westward between the sand beach, and what was an extensive sand flat dry at half tide. Formerly the main channel into the bay was on the western side of the sand flat; it had a width of 300 to 400 feet, with a depth of 5 feet and over at low tide, the small channel that existed on the east side of the flat was shoal and narrow. During late years two other channels have opened up through the flat, resulting in the main channel becoming nearly closed. In order to improve this condition, a contract was entered into on March 12, 1903, for the construction of a 'shear dam,' 1,575 feet long, extending in a north-westerly direction from the south-eastern side of the bay, and completely closing

4-5 EDWARD VII., A. 1905

two of the channels. Work was commenced early in May, 1903, and by the end of June of that year the dam had been partly completed on a length of 980 feet, and the sum of \$1,289.40 had been paid to the contractor.

During the fiscal year 1903-04, the work was continued and completed on November 23, at a total cost of \$5,917.40. The work consists of a round-log open crib-work resting on a bottom formed of brush; the cribwork is 12 feet wide, excepting the outer 20 feet of its length, which has a width of 22 feet; its interior is filled with rock ballast and close-laid brush placed in alternate layers; the sides of the dam are fender-piled at 10 feet centres, while the end and a length of 20 feet on each adjoining side, is close-piled, the top is covered with close-laid trimmed poles.

## GRAHAM'S POND.

Graham's Pond, King's county, is situated on the east coast of the island about 5 miles south of the entrance to Cardigan bay, and about the same distance north of the entrance to Murray harbour.

The pond has a length of about half a mile, and a width of from 600 to 800 feet, carrying in the body of the pond and at a short distance from the entrance, a depth of 6 to 8 feet at ordinary pond level, which is usually from  $1\frac{1}{2}$  to 2 feet higher than ordinary low water, and 3 to  $3\frac{1}{2}$  feet below high water spring tides, which rise about 5 feet.

During 1900, the Department of Marine and Fisheries cut a new channel into the pond in order to make it possible for boats to enter at all times of tides, but the new cut gradually filled in again nearly to its original state. In the fall of 1901, under instructions of the department, the cut made by the Marine and Fisheries Department was cleared out, and a protection of brush and stone was built, which proved effective in keeping the channel in the desired course as well as giving some shelter for boats. In 1902-03, the protection works were further extended at a cost of \$500.

During the fiscal year 1903-04, the sum of \$499.84 was applied on a further extension of the works on either sides of the 30-foot channel to a length of 280 feet.

## GRAND RIVER.

Grand or Ellis River, Prince county, empties into Richmond bay, about seven miles north-east of Wellington, a station on the Prince Edward Island Railway.

During the years 1880-81-82, the Prince Edward Island government built a wharf on the north side of the Grand river, near its mouth, at a cost of \$4,618.60. The wharf is 654 feet long, 22 feet wide and consists of a shore abutment 530 feet long, two blocks respectively 31 and 44 feet long and intervening spans of 25 feet each.

The structure was built of close-faced square timber cribwork filled with stone and brush, the top of the outer block was planked, but the abutment was top finished with clay and gravel.

Owing to the unwillingness of the local government to keep it in repairs, the wharf became dilapidated and unfit to be used for shipping purposes, until the latter part of the year 1902, when it was transferred to the Dominion government.

During its session of 1903, parliament granted the sum of \$1,500 for the reconstruction of the wharf. Work was commenced early in the spring of 1904, and at the end of the fiscal year, the top of the shore abutment, 530 feet in length, had been rebuilt, 132 fender piles driven on both sides and a stone and earth approach 16 feet long had been built. The expenditure during the fiscal year 1903-04 was \$1,337.12.

## LEWIS POINT.

Lewis Point pier, King's county, is situated on the north side of Cardigan river, a short distance below Cardigan Bridge (the head of navigation), and about eight



## SESSIONAL PAPER No. 19

miles from the entrance of the river into Cardigan Bay. The pier is 575 feet long, and is composed of a shore abutment 365 feet in length, two intermediate blocks each 35 feet long, and an outer block 79 feet in length, with intervening spans each about 20 feet wide, the outer block is 33 feet wide. At the outer end and sides of the outer block there is a depth of 12 feet at low water or 17 feet at high water spring tides.

During the fiscal year 1903-04, the top portion of the shore abutment has been renewed on its total length of 365 feet and fender piles were driven 10 feet apart on both sides, general repairs were done on the outer part of the pier. The expenditure for the fiscal year was \$1,088.93.

## MIMINIGASH.

Miminigash Harbour, Prince county, is situated on the north-west coast of the island, about fifteen miles from North Cape, and eighteen miles from West Point. Before its improvement by the department it was one of the numerous ponds along the coast that empty into the Gulf of St. Lawrence by numerous channels through sandy beaches. These channels constantly change their position, and during severe storms often become blocked up, the entrance to Miminigash Pond, however, being well sheltered by 'Miminigash Reef,' a ledge of rock nearly a mile long, that lies parallel with the shore at about half a mile distant, it has the advantage over the other ponds on the coast, and is the one generally used by the fishermen during stormy weather for shelter. After an examination of different sites proposed, it was selected by the department for the formation of a harbour on that portion of the coast. With this object in view work was commenced in 1878, and now consists of breakwaters or piers on each side of the entrance, placed 56 feet apart, confining the channel in a permanent position. The breakwater on the north side is 550 feet long, and that on the south side 350 feet, inward of both of them there are beach protection works, to guard against new channels forming back of the breakwaters, these protection works are of cribwork solidly filled in with brush, poles and stone. The works are of close-faced square timber, fully ballasted, and planked over, the outer faces are close-piled.

During the fiscal year 1903-04, some excavation was done in the channel to remove sand and gravel which had been carried over the northern breakwater during a fall storm; the work extended over a length of 167 feet, 12 feet wide and average depth of 4 feet, the expenditure was \$350.

## NEW LONDON HARBOUR.

New London Harbour, Queen's county, is on the northern coast of the island, about 10 miles east from the entrance into Richmond bay. The entrance of the harbour has a width of about 1,200 feet, it is about 3 miles long and nearly as wide; it receives the waters of the Hope, and South-west, the Stanley and the French rivers, all of which are navigable for short distances and have wharf accommodation from which an export is made of large quantities of farm produce; the districts surrounding the harbour are well cultivated and very productive. The harbour is largely used, as a fishing station and harbour of refuge, for which it is most conveniently situated, the fishing grounds in the vicinity are considered the best in the Gulf of St. Lawrence. For the improvement of the entrance, which is obstructed by a shifting sandbar, works were begun by the department in 1878, these now consist of breakwaters or beach protection works on each side; that on the eastern side has a length of 1,120 feet, while the western one is 460 feet long; the object of their construction being to extend and preserve the sand beaches, and to so confine the current as to cause increased scour across the sandbar. The result obtained has been most satisfactory, the depth of water in the harbour is 6 feet at low water, and 12 feet over the bar, making this one of the best on the north coast of the island.

4-5 EDWARD VII., A. 1905

Since construction the western block has received no damage, the eastern one, however, being exposed to a very strong tide, the action of running ice, and at times, to a very heavy sea, requires, about yearly, some expenditure for its maintenance. During the fiscal year 1902-03, the sum of \$745.93 was expended in rebuilding a length of 50 feet, and in repairs to a further length of 200 feet. During the fiscal year 1903-04, the sum of \$477.15, was expended in depositing additional ballast in different parts of the work where settlement had occurred, repairing the sheathing on the outer block, and rebuilding about 4 feet in height two parts, respectively, 130 and 225 feet long.

On May 3, 1904, a contract was entered into for the construction of a 'jetty' or shear dam on the western side of the entrance about 1,000 feet inwards, or south-westerly from the western breakwater, the purpose of the new work being to improve the depth of water over the shoal at the junction of the French and South-west rivers. The work will have a length of 550 feet, extending to near the inner edge of the shoal; for a length of 300 feet at the inner end, it will be constructed of round-log open cribwork 12 feet in width, solidly filled with ballast, and fender-piled on the sides every 10 feet; for a further length of 200 feet the width of the work will be 17 feet and will be constructed of brush, piles, and stone; the outer 50 feet being of similar construction, but 23 feet in width. The work was commenced on June 2, 1904, and by the end of the fiscal year, the cribwork portion, or inner 300 feet, was about completed, requiring only some little ballasting and the driving of a few fender piles.

## NORTH CARDIGAN.

North Cardigan pier, King's county, is situated on the north side of the Cardigan river about five miles from Cardigan bridge, and is one of the Prince Edward Island piers, control of which was assumed by the Dominion government in 1884. The pier has a length of 381 feet, consisting of a shore abutment or approach 100 feet long and seven blocks with intervening spans, and from 23 to 25 feet wide out to the outer block or pier head, which has a width of 32 feet; the blocks are from 19 to 25 feet long, and the spans from 14 to 26 feet. The approach and all the blocks are constructed of close-faced timber work, filled with brush, stone and gravel, the latter forming the roadway, excepting on the two outer blocks which are floor stringered and planked over. Being a very old work, and much out of repair when assumed by the Dominion government, it has since required extensive repairs from time to time to keep it in passable condition for traffic, the greater portion of it has been nearly all rebuilt.

During the fiscal year 1903-04, the construction of an extension to the wharf was commenced and nearly completed, the new work is 75 feet long, 32 feet wide and the outer end stands in 14 feet at low water spring tides which rise 5 feet, it is built of close-faced round logs, up to low water level, above which the work is built of close-faced square timber, filled with stone ballast and the top finished with broken stone and gravel; it is intended to fender pile the sides and end at above 5 feet centres, and put each alternate pile of creosoted timber. The expenditure on the extension, up to June 30, 1904, has been \$2,699.85.

## ST. PETER'S BAY.

St. Peter's Bay breakwater, King's county, is on the north coast of the island, about thirty-five miles west from East Point, and on the west side of the entrance into St. Peter's Bay, the work was constructed by parliament in 1878 to improve the entrance, and afford a better shelter for the fishermen. Originally it had a length of 226 feet, built of close-face solid timber work, fully ballasted, floor stringered and planked over; to this has since been added beach protection works that extend from

## SESSIONAL PAPER No. 19

the inner end of the breakwater connecting with the sand hills or high ground so as to prevent a channel being cut through the intervening low beach; this breast work or beach protection has a length of 1,420 feet, a width of 9 feet and averages 5 feet in height. The outer end of the breakwater having been damaged by the running ice, action of the teredo, and through natural decay, a contract was entered into on September 26, 1902, for the construction of an extension 30 feet in length, that would give some further shelter and thoroughly secure the work. Materials were got out for this work during the winter or 1902-03, and construction was commenced in the latter part of May. The work was satisfactorily completed on September 17, 1903, at a cost of \$1,557.50, of which \$147.50 was for inspection.

## SOURIS HARBOUR.

Souris harbour, King's county, is situated on the southern side of the island, about sixteen miles west from East Point, and is most important as a harbour of refuge, and maintained by the Dominion government; the work which was commenced in 1875, place of shipment, for both of which it has been made available by a breakwater built has now a length of 1,250 feet, and being of different forms, widths, and construction, for a description of which it may be divided into three sections or portions, viz., inner section, 290 feet long, and 30 feet wide, built of close-faced timber, plumb-faced on the sides, and having on the seaward side, a protecting stone slope; the work stands in an average depth of 7 feet of water at low tides; middle section, 530 feet long, averaging 65 feet wide, also of close-faced square timber, but on the seaward side having the upper 10 feet sloping 1 to 1, this section stands in an average depth of 17 feet at low water, and, during the past three seasons, has been having a stone protection slope formed on its seaward side; on the outer or third section, 390 feet long, 24 feet wide, and has on the seaward side a protection of stone, extending to within 3 feet of the top, and sloping 3 to 1, its end terminates with a block 40 x 80 feet, constructed of close-faced creosoted timber, standing in a depth of 22 feet of water at low spring tides.

During the fiscal year 1903-04, 2,240 cubic yards of stone have been deposited on the seaward side of the middle section, in continuation of the work commenced during the two previous years, towards the formation of the stone protection slope. The cost of this work including superintendence was \$8,572.60, and the sum of \$895.49 was expended in ballasting different parts of the body of the work where settlement and washout has occurred, 831 tons of durable imported stone being employed for the purpose.

Slight repairs were also effected on the outer section.

The total expenditure for the year 1903-04 was \$9,498.09.

## STURGEON.

Sturgeon pier, King's county, is situated on the southern side of Cardigan Bay, about six miles south of Georgetown, the terminus of the Georgetown branch of the Prince Edward Island Railway.

The pier, constructed many years before confederation, by the local government, is one of the Prince Edward Island piers, assumed by the Dominion government in 1884, it is 434 feet long and from 20 to 25 feet wide. Originally the outer 184 feet was formed of blocks and spans, but the latter have since been filled in; with the exception of the outer 40 feet of the length, the top is finished with broken stone and gravel filling, which require some repair nearly every year, owing to the work being low, and storm tides often pass completely over it.

During the fiscal year 1903-04 the sum of \$59.62 was expended in making up washout and settlement that had occurred, and in replacing some broken and defective planks on the pier head.

4-5 EDWARD VII., A. 1905

## TIGNISH.

Tignish Harbour, Prince county, is on the north or Gulf coast of the island, about six miles southward from North Cape. The harbour is at the mouth of the Tignish river that enters the Gulf of St. Lawrence at this place. On each side of the rivers' mouth, the coast line being quite straight for a long distance, gales from the north-east to south-west throw in a very heavy sea, and this acting on the sand of which the beaches are mostly composed often caused the entrance to become completely blocked up, until broken through by a freshet or an unusually high tide. In order to keep the entrance open, and preserve the channel in one position the government of Prince Edward Island, in 1868, began the construction of works on each side of the river mouth, contracting it to a width of 40 feet, thus increasing the scouring effect of the current in entrance channel. After the transfer of these works to the Dominion government they were raised, repaired, and extended; breast-works or beach protections were built on either side of the piers or breakwaters so as to connect them with the high ground, and prevent all possibility of a channel, forming at the back.

During the fiscal year 1903-04, the sum of \$699.93 was expended in the repair and levelling of the outer block of the northern breakwater that had settled on an average depth of 3 feet.

## VERNON RIVER.

Vernon River pier, Queen's county, is situated at the head of navigation of the Vernon river and about 2 miles above its entrance into Orwell bay, it is built on the lower side of the public road bridge with which it is connected by an approach 30 feet in length and 30 feet in width. The pier is one of the Prince Edward Island piers which were transferred to the Dominion government in 1884, it is a close faced block 120 feet in length by 30 feet in width placed parallel with the channel, its outer face is in a depth of 10 feet at low water or 18 feet at high water spring tides. The channel or approach from the main channel of the river to the pier, is about a mile long and was made by dredging. As the pier, &c., was a very old structure and much out of repair when taken over by the Dominion government, some expenditure has been required almost yearly to keep it in passable state for traffic.

During the fiscal year 1903-04, the sum of \$299.26 was expended in replanking the inner 80 feet of its length, and the adjoining approach from the bridge, driving 38 fender piles, ten of which were of crosoted timber, putting on new guard timbers, a new mooring post, and new floor stringers.

## VICTORIA.

Victoria, or Crapaud pier, Queen's county, is situated at the head of navigation of the Crapaud Basin, at Victoria village which is the most important place of shipment after Summerside, on the south-western coast of the island; it is about midway between Charlottetown and Summerside harbours, and about 11 miles distant (south) from Emerald Junction on the Prince Edward Island Railway, it is the outlet of probably the best tilled and most productive districts in the island; a steamer as well plies weekly between Victoria village and Charlottetown. Since confederation the department has expended considerable sums in dredging to improve the approach from deep water in the 'Basin' to the pier, and in repairs and reconstruction which were urgent owing to the dilapidated condition of the work when it was transferred to the Dominion government. The pier has a total length of 486 feet and consists of a shore abutment 286 feet long, and 20 feet wide, a middle section 143 feet long and 37 feet wide, and the pier head 57 feet long and 58 feet wide, with the outer face in a depth of 9 feet at low water, which depth was obtained by dredging. Spring tides rise 8 feet.

## SESSIONAL PAPER No. 19

During the fiscal year 1903-04, the sum of \$84.69 has been expended in putting new mooring posts, in general repairs to the planking of the roadway, and other trifling repairs.

## WEST POINT.

West Point wharf, Prince county, is situate on the north side of Egmont bay, on the eastern shore of Northumberland Strait, about 14 miles from O'Leary station on the Prince Edward Island Railway, and about 35 miles by water from Summerside harbour.

The wharf is one of the Prince Edward Island piers, control of which was assumed by the Dominion government in 1884. It had been built many years before confederation by the provincial government, to give some shipping facilities to the district, there being no wharf or shipping place at the time, where vessels of any size could call at between Summerside and North Cape, a distance of about 60 miles. West Point being midway between these points, was considered a favourable site for a wharf and the work is said to have proved of much benefit up to 1884, when it was badly damaged on the breaking up of the ice, and remained in bad condition until 1898 when it was thoroughly repaired by the department. The wharf had a length of 620 feet, a width of 30 feet, and extended out to a depth of about 7 feet at low water or of 11 feet at high water spring tides. For the purpose of obtaining a better depth of water, a contract was entered into in 1900, for the construction of an extension 100 feet in length, 30 feet in width, reaching a depth of 9 feet at low water, the work was completed in 1901. Since its completion, however, a sandbar has formed a short distance out from the end of the wharf where only 7 feet is found at low water.

During the fiscal year 1903-04, the sum of \$1,438.81 was expended in levelling the new part of the work which had settled considerably, and protecting a portion of the sides by close piles.

## PROVINCE OF NEW BRUNSWICK.

## ANDERSON'S HOLLOW.

Anderson's Hollow, Albert county, is a cove of Salisbury bay, on the north-west side of Chignecto channel in the Bay of Fundy. Spring tides rise  $40\frac{1}{2}$  feet; neaps  $32\frac{1}{2}$  feet.

The breakwater wharf at this place was begun in 1879 by the construction of a detached block 550 feet from the shore, with which it was afterwards connected. In August, 1885, the work was 290 feet in length, and three years later was carried to the shore. The structure, 25 feet wide on top, was originally 27 feet high at the outer end, but the bottom having been raised by the accumulation of the littoral drift, the height is now 3 or 4 feet less. It is built of round timber cribwork, lightly battered on the inside, but sloped at the rate of  $\frac{1}{2}$  to 1 and sheathed on the weather face.

The breakwater was damaged by storm on November 21, 1895, when a small lighthouse placed at the outer end was swept away, together with part of the break; while some of the top work at the head was simultaneously shaken and started.

In 1895-6, a small sum was applied to bolting loosened timber for temporary security.

During the fiscal year 1896-97, the inside face of the wharf at the outer end, which had received a heavy list in the storm of the previous year, was taken down

4-5 EDWARD VII., A. 1905

and rebuilt for a distance of 75 feet on top and 44 feet on the bottom. The list was taken out, the new face being carried to a height of 15 feet, in order to level the top, and new covering was laid for a length of 75 feet. Seventy feet out of 110 feet of dismantled break were reconstructed, and fenders were placed on the inside of the new face.

In 1898-99, by an expenditure of \$121.31, twenty-seven pieces of new sheathing were laid and bolted to the sloping-face; a new cap and face-timber were inserted, and the gap in the break, 40 feet long, left unfinished at the time of the previous repairs, was built up with 4 tiers of timber strengthened with knees.

In 1900-01 the break-timbers, which had been started up from 3 to 9 inches by storms for a distance of 290 feet, were restored to position. For 25 feet at the outer end, the break was raised one tier; 8 bridles, 9 inches square, were placed between the knees of the break for a distance of 100 lineal feet; 3 new pieces of 6-inch sheathing were placed on the sloping face, and loose planks were secured with bolts. Through the shoal obstructing the work on the inside, a channel 300 feet long, 35 feet wide and 5 feet deep was made by means of a wheel scraper. It was found, however, that the shoal formed again rapidly with the recurrence of any south-west swell. A groyne, 50 feet in length, made of piling and 9-inch timber, was built on the outside of the work, in order to check for a time the accumulation of littoral drift on the inside.

During the year 1901-02, new sheathing, 6 inches thick and from 22 to 26 feet long, was laid and secured with  $\frac{3}{4}$ -inch bolts at different places along the weather face of the outermost 190 feet. Additional bolts were also driven to secure the old and loosened sheathing; while 71 pieces of new covering, 6 inches thick, were placed on top of the work.

During the year 1902-03, the weather-face of the outer block, 100 feet long, having become decayed was cut down nearly to the bottom and rebuilt for a width of 13 feet with heavy timbers secured in great measure with screw bolts, the outside being sheathed with 9-inch spruce. More than half the covering of this block was renewed. On it a new break was built three tiers in height for 26 feet, two for 61 feet, and one tier for 13 feet in length. The covering was patched on other parts of the work. Four new fenders were placed and the cap was renewed for a length of 47 feet. An extension of 50 feet, for which foundations were excavated through the shoals to the rock, was begun and brought up to a height of four tiers.

During the fiscal year of 1903-04, the break on the outer block was completed and the sheathing was fully bolted. An extension, 50 feet long, and 27 feet wide, on top, was begun and brought up to within two tiers of the finished top. The sheathing, fenders and covering yet require to be applied to complete this extension. The shoal was excavated sufficiently to make beds for the shipping.

Like many other works in the Bay of Fundy, Anderson's Hollow crosses the direction of the flood stream and of the prevailing winds. In consequence, an accumulation of littoral drift is found on the south-west side, which travels round the end, and is deposited under the lee of the breakwater, forming a shoal which is an obstacle to vessels.

The total expenditure to the 30th of June, 1903, amounted to \$20,569.20.

The expenditure during the fiscal year 1903-04 was \$1,797.22.

#### BELLIVEAU.

Belliveau, Westmoreland county, is a farming settlement on the eastern side of the Petitcodiac river, 14 miles below Moncton, and nearly opposite Hillsborough, in Albert county.

The department constructed a wharf here, in 1888, of round timber cribwork, 233 feet long, 24 feet wide on top and 23 feet high at the outer end, to replace a work de-



## SESSIONAL PAPER No. 19

stroyed in 1869, and to afford facilities for shipping lumber and produce and for landing supplies.

Since its construction, no expenditure has been made on the work, and lately the top has been so much out of repair as to render the wharf unfit for use. Spring tides rise 45 feet, neap tides 38 feet.

During the fiscal year 1903-04, repairs were commenced and carried out to the extent of removing the old cap pieces covering, and upper face timbers, renewing six sticks of the second tier of face-timbers, 18 cross-ties and the four mooring posts. A new tier of upper face-timbers was laid and above it two tiers, close laid, of 10 x 10 square timber around the sides and outer end. The interior for a length of 135 feet from the outer end, was filled with 3½ feet in thickness of brush, which, for a length of 19 feet, was covered with about nine inches of stone. A total of 120 cubic yards of stone was procured towards completing the repairs.

Expenditure for the year was \$750.

The total expenditure to date is \$3,350.27.

## BLACK BROOK.

Black Brook (or Loggieville), Northumberland county, is situated on the southern side of Miramichi river, six miles below Chatham. It is the terminus of the Canada Eastern Railway, and a port of call for the steamer of the Miramichi Steam Navigation Company.

During 1901, the department constructed a wharf at Black Brook, immediately below the Bentley wharf, so-called. It consists of an approach or stone embankment 172 feet long and 20 feet wide on top, with slopes of 1 to 1 on the sides, a span of 15 feet and a pier-head, 25 x 40 feet, of close-faced timber-work, forming a total length of 212 feet, with the outer end in a depth of 10 feet at low water. The top of the approach was finished with cross-ties placed 8 feet apart, filled between with earth and gravel, and at the end of the ties, cap timbers were placed on each side of the work. The wharf was completed in October, 1901.

During a high tide, accompanied by a heavy storm soon after the work was completed, the earth and gravel were washed off the top of the approach and the cross-ties and cap-timbers were displaced.

During the fiscal year, 1902-03, the cross-ties and cap timbers were replaced in position and the ends of the ties secured to the upper stones of the slope with blind wedged bolts. Earth and gravel were again placed between the ties to a depth of three inches above their tops, all openings on the sides were closed to prevent the gravel from working out, and a plank walk, 3 feet wide, was placed along the lower side of the wharf. A pile bulkhead, 18 feet long and 9 feet wide, braced with walings and ties, was built from the lower corner of the Bentley wharf to the inner end of the span of the departmental work, the whole space, 120 feet long and from 10 to 20 feet wide, between the two wharfs, was filled with brush and stone and the top was finished with gravel level with the top of the departmental wharf.

During 1903-04, the Bentley wharf (so-called) was acquired by the department, for the sum of \$3,000, and in May, 1904, its repair was commenced, and also the construction of a pile wharf of 55½ feet frontage and 48½ feet depth to fill the corner between the departmental block and the Bentley wharf.

The repairs consisted in rebuilding the outer and upper faces of the Bentley wharf of cribwork, ballasting and covering on top with 4-inch plank from 12 to 16 feet wide. The inner portion was filled with brush, stone and gravel to the level of the covering, making the whole from 3½ to 4 feet higher than before.

A portion of the new wharf next the departmental block was constructed of a width of 29 feet from the face, covered with 4-inch plank and partly filled with brush and stone. A bulkhead of piles and posts was built to prevent filling material placed

4-5 EDWARD VII., A. 1905

in the new work from sliding into the span behind the departmental block. A total of 483 tons of stone was procured for the work.

The expenditure for the fiscal year 1903-04 was \$2,060.96 not including the amount paid for the Bentley wharf and right of way.

The total expenditure to June 30, 1904, including \$3,000 paid for the Bentley wharf, was \$12,537.27.

#### BUCTOUCHE.

Buctouche river enters the Northumberland Sharoits about midway between Richibucto and Shediac by a narrow and winding channel 4 to 5 fathoms deep in places, but with a ruling depth on the bar of only 8 feet at low water spring tides. It is navigable for eleven or twelve miles.

Four mile from the sea is Buctouche village, Kent county, where a considerable trade is carried on in lumber, coal, fish, &c. In 1884-86 the department constructed here a wharf of round timber fendered with piles, about 300 feet long and 40 feet wide with a depth of 17 feet at low water or 21 feet at high water spring tides at the face. The work is parallel to the shore and immediately below the road bridge spanning the Buctouche river. A siding of the Moncton and Buctouche Railway runs close to the back of the wharf throughout its length.

In 1894, the wharf having been partially destroyed by fire, repairs were begun but not completed.

In 1898-99 materials were procured and in 1899-1900 and 1900-01 the upper portion was repaired.

During the fiscal year 1903-04 the lower portion, 136 feet long was repaired. The remains of the old cribwork were torn down to about low water mark and 18 bents, generally 8 feet apart, of 6 piles each, were constructed, ballasted, and covered with 4-inch plank on a width of 25 feet. Four pile mooring posts were also driven. The inner 15 feet of the width of the wharf was filled with brush, stone and earth to the level of the covering and this filling was continued along the back of the upper portion where settlement had occurred, and extended as an inclined approach to the road bridge. On the approach from the street a new covering, 17 feet wide, was laid for a length of 128 feet and the cap-timbers were renewed.

The expenditure for 1903-04 was \$2,438.93.

The total expenditure to June 30, 1904, was \$10,964.80.

#### BURNT CHURCH.

Burnt Church, Northumberland county, is a farming, fishing and lumbering settlement on the north shore of Miramichi bay, twenty-two miles north-east of Chatham and five or six miles south of Neguac. The Miramichi Steam Navigation Company's boat calls twice daily during the season and the place is much frequented as a summer resort. During 1899-1900, a contract was let for the construction of a wharf 1,180 feet long, composed of a shore block 200 feet long and 20 feet wide; twenty-three blocks 21 feet long and 20 feet wide, placed 20 feet apart, and a pierhead 60 feet long by 40 feet wide, the latter standing in 9 feet at low water. Spring tides rise 5 feet. The whole was constructed of round timber open cribwork, topped with 12 by 12-inch stringers and 4-inch plank. The work was completed on September 15, 1901.

During 1903-04 complaints having been made that a dangerous rock lay in the path of steamers approaching the wharf, an examination was made and a boulder found weighing about 10 tons, lying 300 feet above the wharf and 50 feet outside the range of the pierhead. A blade broken from a steamer's propeller was found beside it. With the aid of a diver, the boulder was blasted and removed.

Thirteen fenders were placed on the outside face and corners of the pierhead, to prevent damage to the steamer through catching on the face or on the iron straps at the corners.



## SESSIONAL PAPER No. 19

The outermost span of the wharf was also closed to give security to boats lying inside the pierhead, by placing three longitudinals one above the other between the blocks and spiking 3-inch hardwood plank close laid vertically to each side.

The expenditure for the year was \$321.82.

The total expenditure to June 30, 1904, was \$14,709.90.

## CAMPBELLTON.

Campbellton, Restigouche county, a deal port from which 24,142,117 superficial feet of lumber was shipped in 1902, and an incorporated town of some 3,000 inhabitants. is situated on the southern side of the Restigouche river. It is directly opposite Cross Point, in Bonaventure county, P.Q., fourteen miles above Dalhousie, the shire town of the county and six miles below the head of tide water. Spring tides rise 11 feet.

In 1889, the department constructed a block, 140 feet long and  $34\frac{1}{2}$  feet wide on top, of close-faced timber cribwork, 108 feet below what was then known as the Ferguson wharf, and in 1892, another block of similar construction and width, to close the opening between the two works, giving a total frontage to the departmental wharf of 250 feet, with a depth of 12 feet at the outer face.

After the construction of the second block, the Ferguson work was sold to J. P. Mowat, and subsequently by him to Kilgour Shives.

As access could only be had to the departmental work by traversing the Shives' wharf, steps were taken in 1901 to acquire the latter, and as it was in need of repairs, materials were procured at a cost of \$2,224.32 during the same year, to effect such necessary repairs, but the work was not commenced owing to delay in the purchase of the property.

During the fiscal year 1902-03, the Shives' wharf became vested in the Crown. The sum of \$226.50 was expended during that year in caring for and looking after the timber procured for repairs.

During 1903-04, the repairs of the Shives' wharf were begun on the outside face 90 feet long, and for a length of 50 feet on the upper face. The old work was torn down to near low water level and walings were bolted to main piles on the face and to posts on sills inside and resting on the old work. A ballast floor was laid on the lower walings and covered with 8 feet of ballast. The whole was covered with 6-inch plank for a width of 18 feet on the front face and 15 feet on the upper face, and close piling was driven between the main piles. The inner portion of the wharf was graded level with the flooring with stones and earth. A new pile driver was also built.

On June 30, the work remaining to be done to complete the above repairs was :—driving about eighteen close piles, bolting the same, placing forty short pieces between the piles above the tops of the walings, and placing two mooring posts. A slight amount of grading also remained to be done.

The expenditure for the fiscal year 1903-04, was \$7,684.18.

The total expenditure to June 30, 1904, was \$26,818.44.

## CAPE TORMENTINE.

Cape Tormentine, Westmoreland county, is situated on the south-western side of Northumberland straits, at the extreme eastern end of Westmoreland county. It is the terminus of the New Brunswick and Prince Edward Island Railway and the nearest point of communication between Prince Edward Island and the mainland, the distance being nine miles.

With a view to forming an artificial harbour for purposes of interprovincial communication between the island and the mainland during the winter, a breakwater pier was constructed by the department between 1886 and 1892.

The structure comprises a straight pier (or approach) 2,500 feet long, the first 1,300 feet of which is a rubble mound 20 feet wide on top with pitched slopes of 2 to 1,

4-5 EDWARD VII., A. 1905

and the remainder of close-faced timber cribwork, 30 feet wide on top, a pierhead and return of similar construction, each 400 feet long and 40 feet wide from the base up to a little above low water, then decreasing to 30 feet at the finished top, which is 4 feet above high water spring tides. Between low water and the top of the work, the head and return present a sloping face sheathed with hardwood to the east and south. The whole incloses a basin or harbour of about four acres in area with depth, up to the autumn of 1892, of 13 to 15 feet at low water, but increased since then, by dredging over some parts, to a depth of 18 feet.

Spring tides rise  $7\frac{3}{4}$  feet and neaps  $3\frac{1}{4}$  feet.

Owing to the ravages of the teredo, repairs became necessary to the timber section of the work soon after its completion and have since been carried on annually. They have consisted mainly in renewing the face timbers and sheathing of the sloping faces of the pierhead and return, protecting the north and portion of the south faces of the approach and about 300 feet of the outer face of the head with large and small stone, and driving close-piling along a portion of the south side of the approach.

During 1901-02, a temporary quay face 180 feet long was constructed along the outer or south face of the return, to afford landing facilities for the steamer 'Stanley' plying between Cape Tormentine and Prince Edward Island during the winter.

This work consisted of piles driven every 4 feet along the outer face and of hardwood timber cribwork tied into the old work. Repairs were also made to different sections of the sloping face. Over 5,000 cubic yards of large and small stone were deposited along the northern and eastern faces of the approach and head; 361 creosoted piles were driven, generally  $2\frac{1}{2}$  feet apart, along the harbour sides of the pier, a frame building 100 feet long and 25 feet wide, for the reception of freight and also affording waiting rooms, was built on the return section of the work, and 35,000 feet B.M. of timber were delivered for levelling up 250 feet of the approach which had settled considerably, consequent upon the action of the teredo.

During 1902-03, 750 feet of the approach was raised from 6 inches to  $2\frac{1}{2}$  feet and levelled by the addition of new face timbers, cross-ties and stringers, and for 115 feet the bays on the south side were filled with stone. The timbers were treated with carbolineum. Seventy-five creosoted piles were driven  $2\frac{1}{2}$  feet apart along the dock faces and 24 along the outside of the quay face built in 1901-02. The quay face was also extended westward 25 feet and protected with boiler plates for a length of 200 feet.

The south-east corner of the pierhead was straightened by a work composed of double close piling (73 piles in all) and walings, filled with stone, covered with  $4\frac{1}{2}$  inch plank and secured outside with 4 iron straps.

A movable platform 20 x 8 feet was built at the new freight shed and the latter repaired. New face timbers and sheathing were placed on a length of 80 feet of the sloping face. A new mooring post was placed and 1949.9 cubic yards of large stone and about 450 cubic yards of small stone were deposited outside the pier-head and along both faces of the approach.

During 1903-04, the raising and levelling of the top of the work was continued to the end of the approach, a distance of 330 feet and for 40 feet of the pierhead, and an additional 60 feet of the pierhead was levelled but no covering laid. This work on the pierhead is similar to that on the approach with the exception that a row of piles was driven every 5 feet inside the outer face and screw bolted to face timbers and cross-ties. Sufficient timber for completing the work was procured.

On the section of the pierhead, 49 feet long, near the south-east corner, the old timbers of the sloping face and of a part of the main work were removed nearly to low water level, and a new crib and pilework with vertical face, protected by 42 creosoted piles driven close on the outside, was built to a height of 4 feet above high water, fully ballasted and covered with 5-inch plank. Slight repairs were made to the planking of the return and to the freight shed, and movable platform 7 x 70 feet was built on the pierhead for the winter service and removed in the spring. On the

## SESSIONAL PAPER No. 19

return, 30 feet of sheathing was removed on the sloping face. A new pile driver frame was built and 410 cubic yards of large and 89 cubic yards of small stone were deposited along both faces of the approach.

The expenditure for the year 1903-04 was \$10,109.42.

The total expenditure on this work to June 30, 1904, was \$313,190.92.

## CARAQUET.

Caraquet, Gloucester county, a thriving fishing settlement and a station on the Caraquet Railway, is situated on the southern side of Baie des Chaleurs, 42 miles east of Bathurst, the shire town of the county.

For the purpose of establishing a deep water terminus for the shipment of lumber, a contract was entered into in March, 1902, with Messrs. Simmons & Burpee, Marysville, N. B., for the construction of a block and span wharf 1,700 feet long, with a depth, along the outer 300 feet, of 22 feet at low water. The contract price was \$59,990. Spring tides rise 6 feet.

The wharf is to consist of an approach or shore block 255 feet long and 25 feet wide on top, 25 blocks 25 feet square on top, with sides battering 1 in 9; a pier-head 300 feet long and 40 feet wide, and 26 spans or openings of 20 feet each. The blocks are to be constructed of round timber open cribwork, and the openings spanned by double 12 x 12-inch timbers.

The work of construction was commenced on July 7, 1902, and at the close of the fiscal year 1902-03, had progressed as follows:—The cribwork of the approach or shore block and blocks Nos. 1 to 5, inclusive, were completed, ready to receive the corbels and stringers; block No. 6 was constructed to within one tier of cross-ties of the required height, and blocks Nos. 7, 8 and 9, were built eight tiers high and placed in position.

At the close of the fiscal year 1903-04, the cribwork of the approach and first ten blocks were completed ready to receive corbels and stringers; the cribwork of block No. 11 was built to within 3 tiers of the top; blocks 12 to 19 were built to full height; blocks 20 to 23 to about 2 feet above low water level and block 24, 19 tiers high.

A section of the pier-head 50 feet long was built 19 tiers high and a section 100 feet long to a height of four tiers.

The expenditure during 1903-04 was \$11,629 including \$10,700 on contract and \$939 for inspector's services.

The total expenditure to June 30, 1904, was \$17,695.23.

## CHOCKFISH RIVER.

Chockfish river, Kent county, empties into Northumberland straits, about midway between the entrances to Richibucto and Bécouche harbours.

A sand beach extending from the north has rendered the entrance to the river circuitous and shallow. To produce a straight and deeper channel and safer entrance for fishing boats, the construction of a dam was begun in the autumn of 1901 to close the new channel 400 feet south of the original river mouth. It was built from the mainland a distance of 130 feet, the channel shifting outward around its end at the same time. The dam consists of a rubble mound 7 feet wide on top laid on brush mattresses, through which were driven two rows, 7 feet apart, of piles spaced 5 feet centre to centre longitudinally.

In 1902-03 construction was commenced on the sand beach and continued shorewards to meet the old work, and an extension of 27½ feet long of lighter construction was built at the inner end of the latter, giving the dam a total length of 356½ feet. At the same time a trench was cut through the beach, about 300 feet north of the dam, which, under the influence of spring freshets, enlarged to a channel about 70 feet wide

4-5 EDWARD VII., A. 1905

with 8 to 9 feet of water at spring high tides, making a considerable improvement over the old channel.

During 1903-04 a breakwater was built running south-easterly from the northern side of the new mouth. It consists of an inner length of 48 feet, formed of posts and cross-ties (8 bents) to carry a light tramway, with brush and stone between to catch the drifting sand. A length of 348 feet constructed of 2 rows of piles 6 feet apart centre to centre each way with caps and two walings of 10 x 10 timber, filled between with brush and stone with a slope on the seaward side, and an outer section 120 feet long, constructed of three rows of piles, the outer row being driven close together and the two inner rows 6 feet apart longitudinally, with cross-ties 10 x 12 and 4 walings of 10 x 10 and 12 x 12 timber. The width over all of this part is 11 feet 6 inches. The interior is filled with brush and stone with the exception of 12 bays which still require an additional foot of stone. The outside face is also to be protected with a brush and stone slope for which sufficient stone has been procured.

The expenditure for the year 1903-04 was \$1,993.80.

The total expenditure on this work to June 30, 1904, was \$4,764.89.

#### CLIFTON.

Clifton (Stonehaven), Gloucester county, a station on the Caraquet Railway, is situated on the southern shore of the Baie des Chaleurs, 18 miles east of Bathurst, the shire town of the county, and 8 miles west of Grande Anse.

A breakwater at Stonehaven, originally 425 feet long and constructed by private persons, was acquired by the department in 1878, and during the same year was extended 325 feet, making a total length of 750 feet. The outer 220 feet is placed at an angle of 72 degrees with the inner portion and the whole constructed of round and square timber cribwork filled with stone and partly protected along the northern and eastern faces by a stone talus. The harbour affords shelter for fishing vessels, and for schooners engaged in the export of grindstones, &c., the depth at low water being 7 to 8 feet. Spring tides rise 7 feet.

During 1886-87, 1887-88, between 1891-93 and again in 1897-98 and 1898-99, general repairs were made to the work, and a portion of the northern and eastern faces were protected by large stones of from  $\frac{1}{2}$  to 1 cubic yard in bulk.

In 1899-1900, two openings in the eastern face, 16 and 19 feet wide, were closed and other repairs were made; materials were also procured for the construction of a block 70 x 40 feet at the western end of the breakwater, for the purpose of preventing the stone placed along the northern face from being swept around the end during easterly storms. During 1900-01 the timbers for the proposed block were framed and the old work was repaired for a length of 103 feet.

In 1901-02, the top of the outer 200 feet of the breakwater was stripped and new longitudinals, cross-ties and covering placed; a tramway was built along the northern face; 719 cubic yards of stone were placed along the northern and eastern faces, and minor repairs made to cap, fenders and face timbers. The substructure of the new block, 70 x 40 feet of close-faced cribwork, was also constructed 11 tiers, or 9 feet 2 inches high, and successfully placed at the western end of the breakwater.

During 1902-03, the new block was completed, the total height being 17 feet 6 inches. It is covered with 6-inch plank, with 12 x 12 caps and 10 x 10 fenders, with three iron straps at each corner. Thirteen 10 x 12 fenders, 15 feet long, were placed along the northern face of the old work and 900 cubic yards of large stone deposited outside the same face.

During 1903-04 a new break was constructed along the northern face of the L, and consists of two tiers each of cross-ties and longitudinals with stringers and 4-inch covering, the width being 6 to 6 $\frac{1}{2}$  feet. The outer face of the wharf received four tiers of 10 by 12-inch timbers laid close, and continued the whole length of the northern

## SESSIONAL PAPER No. 19

face for a length of 223 feet. The turn-table, at the end of the tramway, was raised to the height of the new break and the tramway rails along the eastern face of the approach were graded to the new height by means of extra ties over a length of 120 feet. The interior of the new break was filled with ballast. This work replaces an old break constructed of face-timbers and knees which was much out of repair. The outside face was also strengthened by the addition of thirty-four fenders.

A ramp 17 feet 6 inches wide and 17 feet long of cross-ties, stringers and 6-inch covering and filled with ballast, was built on the western end of the L to enable teams to ascend to the new pier-head.

741 cubic yards of large stone were deposited on the northern and eastern faces of the work.

The expenditure for the year 1903-04, was \$2,289.50.

The total expenditure to June 30, 1904, was \$293,075.94.

## CROSS POINT.

Cross Point, Restigouche county, is situated on the north shore of the Restigouche river, opposite the town of Campbellton, N.B.

In the year 1902-03 the sum of \$10,045 was authorized for the construction of a landing pier at that place. The contract was awarded in March, 1903.

During the year 1902-03 the sum of \$6,907.97 was expended on the work.

During the year 1903-04 the contract was completed and the amount expended during the fiscal year was \$3,137.03.

## EDGETT'S LANDING.

Edgett's Landing, in Albert county, is on the west side of the Petitecodiac river, two miles below the village of Hillsborough.

To replace an old provincial government work, destroyed by the Saxby gale in 1869, the construction of a wharf was begun twenty years later by the department, and was finally completed in the fiscal year ended June, 1903. The wharf is 400 feet long, composed of an earthen approach 20 feet wide, and 50 feet in length; round timber cribwork 250 feet, and square timber cribwork 100 feet long. The head is 40 feet wide. Spring tides rise 46 feet. The pier head, 35 feet high, stands in 30 feet at high water and is dry at low water.

Renewal of the covering, which had become decayed, and levelling up of the stringers, which had settled, was begun in May, 1900, and was completed in 1900-01.

During the fiscal year 1903-04 the approach, 270 feet long, was raised above tide level with brush and gravel, protected on each side by stone. Thirteen broken cross-ties were replaced with new ones 12 feet in length; slight repairs were made to the covering and two new mooring posts 15 inches in diameter were placed in position.

The total expenditure to June 30, 1903 amounted to \$9,930.95.

The expenditure during the fiscal year 1903-04 was \$410.

## FORT DUFFERIN.

Fort Dufferin, St. John county, built by the imperial government to command the western entrance to St. John harbour, stands on high ground immediately above the end of Negropoint breakwater. In order to preserve from erosion by the waves the headland crowned by the battery, this department began in 1882 at tide level a retaining wall of sheathed cribwork 430 feet in length, and in the following year constructed a further length of 303 feet. The work is exposed on the one hand to the force of the waves, and on the other hand to land slips.

In 1886-87, it was much disturbed by the sea and repairs were made in that and the following years, 205 feet of the original work being rebuilt. From 1887 to 1889 repairs were also made, and in 1890 the work was extended 100 feet.

4-5 EDWARD VII., A. 1905

General repairs were made in 1893-94. The work is from 7 to 14 feet wide on top, and about 9 feet in mean height. The crest for the whole length is surrounded by a break 2½ feet high.

During the year 1896-97, a gap 81 feet long in the break was repaired, and the sheathing was patched at intervals along the face with hardwood planking. In order to raise the beach, and so protect the lower part of the face, toward the end of 1896, a groyne 40 feet long, 10 feet wide and 4 feet in average height, was built of hardwood piles, timber and stone. In 1897, extension of the cribwork a distance of 130 feet was begun, and by the end of the fiscal year had been brought within two tiers of the full height.

In 1897-98, the new extension was completed, ballasted and sheathed. Small repairs were also made to the sheathing of the old work.

In 1898-99 four groynes, in all 232 lineal feet, each built of hardwood piles spaced 4 feet apart, driven from 9 to 12 feet into the bottom and planked with birch 9 inches square, securely strapped and bolted, were placed along the beach to protect the lower part of the sheathing of the breast-work; some ballast was also placed in the cribwork.

Ordinary repairs comprising restoration of a breach in the face, ballasting and renewal of the sheathing, were made during the year 1899-1900.

In 1900-01, the face was sheathed for 145 lineal feet; ten piles were driven to restore, with the addition of cribwork, a breach 11 feet long. At the upper end, the breast-work was repaired for a distance of 235 feet.

In 1902-03, the face of the breast-work was protected with close piling for a length of about 178 feet. An extension of the protection was made for a distance of 94 feet by driving close piling, secured with double walings and stiffened by bracing fastened to piles driven 13 feet in the rear. The inside of this work was partially filled with brush and stone.

During the fiscal year 1903-04, a new block, 70 feet long and 20 feet wide of close-faced cribwork, was built at the inner end of the breast-work. The cap of this block is flush with the break of the old work. The total expenditure to June 30, 1903, amounted to \$26,671.64.

The expenditure during the fiscal year 1903-04, was \$3,499.66.

#### GRANDE ANSE.

Grande Anse, Gloucester county, a station on the Caraquet Railway and a fishing and farming settlement with a population of between 700 and 800 inhabitants, is situated on the southern shore of Baie des Chaleurs, twenty-five miles north-east of Bathurst, and fifteen miles west of Caraquet.

For the purpose of affording shelter to the fishing boats of the locality and others frequenting Baie des Chaleurs, the department, in 1876, commenced the construction of an isolated breakwater placed between 500 and 600 feet from the shore, and subsequently extended it to a length of 397 feet, 159 feet of which forms a shore arm, and the remaining 238 feet a head, nearly at right angles to the former with a sloping face of 1 to 1, on the north or seaward side.

To give increased protection to the fishing boats, a contract was entered into during 1901-02, with J. W. Dumas, for the construction of an extension of close-faced cribwork 250 feet long, 21½ feet wide, and from 10½ to 13½ feet high to extend from the inner end of the present work shoreward, and also for the removal of material consisting of sand, mud and stones which had accumulated inside the harbour formed by the original work.

At the close of the fiscal year 1901-02, the extension was constructed an average height of 7½ feet on a length of 264 feet, the required length of the work at the bottom, and 30 cubic yards of material had been removed from the area required to be dredged.

During the year 1902-03, the extension was completed and 1,470 cubic yards of material were removed by dredging. Repairs were also made to the old work during



## SESSIONAL PAPER No. 19

the year, viz.: driving six fender piles and rebolting seven loose ones on the north side, inserting five new face timbers, 10 yards of ballast, renewing part of the sheathing in a length of 20 feet of the sloping face, placing a ladder and close fendering 20 feet of the inner face.

During the fiscal year 1903-04, the remainder of the dredging required by the contract with J. W. Dumas, was completed with the exception of 800 cubic yards which could not be removed by any local dredge as the material was too hard. As the required depth had been attained over the area most in use, a settlement was made with the contractor by payment of the amount remaining due on the contract price, \$10,900, less \$480, for dredging not performed.

Repairs were also made at the north angle of the old work where, for a length of 27 feet, the sloping face had been carried away leaving intact the original vertical face of the wharf. Twenty-three new fenders laid close were placed to strengthen the old face. The bay, 12 feet long, of the sloping face adjoining the break, was strengthened by placing an extra set of cross-ties inside and at the end, which was also protected by close fendering, extra longitudinals inside and by filling it with ballast.

The total expenditure for the year 1903-04 was \$2,515.69 of which \$2,180 was under the contract, \$65 for inspection and \$270.69 for repairs.

The total expenditure to June 30, 1904 was \$34,031.11.

## HOPEWELL CAPE.

Hopewell Cape, in Albert county, near the mouth of the Petitcodiac river, and at the head of deep water navigation, is one of the several works on that stream intended for the convenience of shipping. For the use of vessels proceeding to Moncton, Hillsborough and Dorchester for cargoes, the department in 1883 began the construction of a ballast wharf of round timber cribwork, 300 feet in length and 22 feet wide, which was completed in the following year. In 1885, the work was extended to the present length of 583 feet by an addition built of square timber. The covering, stringers, and other upper timbers having become decayed, preparations were made in 1899-1900 (the appropriation being very small) for repairing the work, by the purchase of materials. By the end of that year a part of the timber had been delivered.

In 1900-01 the outer end for a length of 283 feet, was rebuilt for a height varying from 4 to 6 feet. The top of the pier-head was also rebuilt.

By a fire, which destroyed part of the village of Hopewell Cape, the top of the inner end, 300 feet long, of the ballast wharf was burnt. The fire obtained lodgment in the decayed internal timbers of this work, and was with some difficulty extinguished in time to save the outer end of the wharf, which is built of square timber cribwork.

During the fiscal year 1903-04, the burnt timbers of the ballast wharf were removed, and the square timber cribwork was rebuilt from 3 to 6 tiers to the level of the stringers.

The round timber cribwork was also rebuilt to the height of 2 tiers and was brought up to the level of the under side of the stringers, the voids under the lower ballast floor being filled with stone. On the north side, the footing stones of a new slope were placed for 70 feet and one tier of the slope was laid for the same distance. On the south side of the work, the footing stones were laid for a length of 54 feet; while the first tier of the slope stones was carried 33 feet and the second tier 10 feet in length. The brush mattress, on which the slope is being placed, was laid for 200 feet, the full length.

The total expenditure to June 30, 1903 amounted to \$10,767.82.

The expenditure during the fiscal year 1903-04 was \$4,641.83.

## HOPEWELL HILL.

At Hopewell Hill, in Albert county, on Shepody river, an arm of the Petitcodiac, a contract was let in 1900-01 for the erection of a new public wharf of round timber

4-5 EDWARD VII., A. 1905

cribwork. Construction was commenced in June, 1901, and the work was completed in November of the same year. The wharf, 101 feet in total length, consists of a stone approach 24 feet long and 30 feet wide on top; 2 blocks, each 20 by 40 feet, and two intervening spans of 15 feet. The blocks are of open cribwork, planked on top, and fendered on the sides.

In the fiscal year 1902-03, a right of way to the wharf, 66 feet wide, was acquired, and a road, 500 feet long and 20 feet wide on top, composed of alternate layers of brush and clay, was built. The road, which is outside the dykes, is altogether in embankment, the fill being 10 feet in maximum depth. The work comprehends 2,216 cubic yards of brush and clay in about equal parts. In the deepest part of the filling, a culvert 32 feet long was built.

In 1903-04, a bed for vessels to ground upon at low water, 73 feet long, 25 feet wide and 10 feet high at the outer end, was made of cribwork, brush and clay, on the lower side of the wharf.

The total expenditure to June 30, 1903, amounted to \$4,603.14.

The expenditure during the fiscal year 1903-04 was \$244.56.

#### LITTLE SALMON RIVER.

Little Salmon river, a tidal inlet of the Bay of Fundy, 14 miles east of Quaco, in the county of St. John, is the site of a mill producing lumber to the value of about \$25,000 annually. At this place, spring tides rise 30 feet. The beach protecting this little haven, being in danger of denudation, a protection work, 430 feet long, with a groyne 92 feet long, of piles and planking extending along the crest of the beach, was built during the fiscal year 1902-03.

A heavy storm scoured the beach below the level of the protection, and having carried away the groyne, two streaks of planking were added and the groyne was rebuilt during the fiscal year 1903-04.

The total expenditure to June 30, 1903, amounted to \$714.48.

The expenditure during the fiscal year 1903-04 was \$634.78.

#### LORD'S COVE.

Lord's Cove, Charlotte county, a small fishing station on Deer island, is a port of call for steamers plying between St. Stephen, St. Andrew's, Eastport, and other points in Passamaquoddy bay. To afford facilities for this steamer, the construction of a wharf was begun in 1900-01. Spring tides rise 24 feet.

The wharf, without the approach, is intended to be a pile and trestle work, 328 feet long and 21 feet wide, with a pier-head 33 feet in height.

During the fiscal year 1902-03, this wharf was extended to the back of the pier-head, a length of 120 feet, by driving 12 bents and by completing the laying of the covering and the cap. A gallows-frame, ladder and flight of steps were also made, in order that the public might make immediate use of the wharf.

The work was then 289 feet long, exclusive of the stone approach, 28 feet in length.

In 1903-04, the pierhead (50 by 40 feet) was built, to which 17 fenders and 58 short braces yet remain to be applied. The work is now 328 feet long and 21 feet wide, with a pierhead 35 feet in height. The wharf is approached by a stone embankment, 28 feet long, and a rock cutting 61 feet in length.

The total expenditure to June 30, 1903, amounted to \$3,000.

The expenditure during the fiscal year 1903-04 was \$1,050.

#### MISCOU.

Miscou harbour is at the extreme northern end of the county of Gloucester, between the Shippegan islands and Miscou island, on the eastern entrance from the Gulf of St. Lawrence into Baie des Chaleurs.



## SESSIONAL PAPER No. 19

At low water the harbour has an area of about five square miles, it is well protected from the prevailing winds and has good anchorage. The main entrance into the harbour is from the Baie des Chaleurs, on the west, where a channel 5 to 7 fathoms deep can be found. The eastern entrance from the Gulf of St. Lawrence, is known as Miscou Gully, which is a narrow passage left between the beaches extending from the two islands.

The population of Miscou island is about 500, occupied chiefly in fishing, seventy-five fishing boats are owned in the island and eleven lobster factories have been established.

The exports for 1902 amounted to \$75,000 (chiefly lobsters, herring and codfish) and the imports \$50,000.

In order to afford landing facilities on the harbour front for the inhabitants of Miscou island, the department entered into a contract, on April 27, 1904, with Messrs. Burns & Charleson, for the construction of a wharf, at this place. The wharf will consist of a shore block 200 feet long by 20 feet wide, seventeen blocks each 20 feet square and eighteen spans of 20 feet, and a pierhead, 40 x 30 feet, placed in 3.8 feet of water at low water ordinary spring tides. The contract price is \$13,700. Spring tides rise 6 feet.

Construction had not been begun at the end of the fiscal year 1903-04.

Expenditure in calling for tenders, &c., \$73.72.

## MISPEC.

Mispec is situated on the north shore of the Bay of Fundy, eight miles east of St. John, in the county of that name. Near the outer end of a narrow cove, which receives the discharge of Mispec river and constitutes the harbour, the department built on the west side in 1885 a breakwater, 197 feet long, 25 feet in mean width and 30 feet high at the outer end.

Repairs were made in 1889-90 to the seaward face, and again in 1892-93. In consequence of the establishment at this place of a pulp-mill, capable of producing 40 tons per day and employing 150 hands, repairs to the work were begun in 1898-99, when a sum of \$800 was expended in procuring materials; in replacing seven tiers of the face for a distance of 74 feet along the work with heavy birch timbers, 16 inches square, secured by screw bolts, and in ballasting the work.

The breakwater was, however, found insufficient for the protection of the rafts of pulp wood and also of the schooners and lighters engaged in carrying coal, sulphur and limestone to the mill, or in transporting pulp when manufactured from the mill to St. John for shipment. On this account, a contract for a new breakwater to be placed on the east side of the entrance was let in 1900-01. In the same year preparations for the foundation of this work were begun by benching the rough rock, at expenditure of \$743.57.

In 1901-02, the new breakwater, 168 feet long, 34 feet wide on top, 50 feet wide at the bottom, and 30 feet high at the outer end, was completed.

At the same time, the original work on the west side was repaired and raised to the same height as the new breakwater; 79 feet of the sloping face were sheathed with 6-inch spruce plank; a new set of longitudinals was laid for part of the length of the work, and a new set of cross-ties, stringers and covering for the whole length. The outer and inner faces were constructed of square timber for a height carrying between two and six tiers, and the inner face, outer end and outer face were fendered. Additional ballast was also placed in the whole of the work.

In 1903-04, new longitudinals of heavy birch were placed for a distance of 70 feet in the sloping face, on which new spruce sheathing was laid. Eleven new fenders were placed on the outside of the work, a ladder was made, the sloping face was strapped with iron and the wharf was ballasted.

The total expenditure to June 30, 1903 amounted to \$26,213.

The expenditure during the fiscal year 1903-04 was \$991.68.

4-5 EDWARD VII., A. 1905

## NEGROPOINT.

Negropoint, St. John county, is a headland about 60 feet above high water mark at the western entrance to St. John harbour, which is formed by the estuary of the River St. John on the northern side of the Bay of Fundy. Spring tides rise 25:33 feet. Neaps 15 to 20 feet.

In addition to convenience of position for distribution by rail of cargoes landed at the city of St. John, the harbour is remarkable principally for great tidal range, and for consequent freedom from ice in the winter months. The harbour is open, broadly speaking, from south-east to south-west, waves are mitigated by Negropoint breakwater, while the Foul Ground, a shoal tailing down from peninsula on which the city is built, must have more or less effect in moderating the force of the easterly seas rolling round Mispic Point.

By Partridge Island, a rocky eminence devoted to quarantine and lighthouse purposes, the entrance of St. John harbour is divided into east and west channels. In the former or main channel, a minimum navigable depth of 19 feet is found on the bar at low water at ordinary spring tides. Two hundred yards inside the crest of the bar, a depth of five fathoms is obtained in the narrow fairway, while higher up and between the most southerly of the principal wharfs on either side of the harbour (450 yards wide at that point), twelve fathoms are given in mid-channel. The west channel 10 to 14 feet deep at low water, and originally 120 yards wide, has been contracted to about as many feet in breadth by Negropoint breakwater, which extends 2,200 feet SE. by S. from the headland so styled.

The reasons for undertaking this work are thus stated in the reports of the Minister of Public Works for 1875 and 1882 :

1875. This breakwater extends south-easterly from Negropoint at the western entrance of St. John. When completed it will extend a distance of 2,500 feet, closing up the west channel to that extent, leaving, however, a width of 1,100 feet between the outer end and Partridge island. The object is to break the force of the seas which roll into the harbour of St. John during the south-west gales in the Bay of Fundy, and which render it dangerous and almost impossible at such times for vessels to make the harbour.

1882. South-westerly winds threw in a heavy sea through the western channel which rendered it difficult for vessels to make the harbour, as they were in danger of being carried on the Foul Ground on the eastern side of the channel. In the spring of 1875, a breakwater 2,250 feet long to partially close the western channel was begun, and in September, 1877, completed.

Reference to the chart will show that as long as the present opening remains, the object of the breakwater has been only partially fulfilled. In dealing with the reduction of the bar, a more cogent reason than improvement of shelter may be found for the extension of the work to Partridge island.

The breakwater consisted at first of a cribwork core, 30 feet wide at the base, and 15 feet wide at the top (5 feet above high water ordinary spring tides), protected on both sides by large stones sloping to seaward at the rate of two to one, and landward at the rate of one to one. In the month of February, 1879, thirteen hundred lineal feet of cribwork were swept away to a depth varying between 13 and 19 feet from the top, the stones having been raked down by the wave-action to a slope more nearly resembling the angle of repose of the material. In 1880, temporary repairs were made, and in 1881 a contract, completed six years afterwards, was entered into, whereby the lost cribwork was replaced by heavy stones and the seaward slope made three to one. Even this flatter inclination proved too steep for stability; consequently, notwithstanding their size, the stones, though smoothly laid, were soon displaced by the sea. A length of 50 feet of the breakwater extending at full height beyond a masonry pier, built under the same contract to support a beacon, was also swept away. From 1891 to 1894, desultory repairs were made by the addition of large stones, chiefly deposited about the end to prevent the lighthouse from being undermined.

## SESSIONAL PAPER No. 19

In May and June, 1895, four large blocks of concrete were placed for the purpose in front of the base of the pier. In 1895-96, seven concrete blocks, founded about the level of low water neaps, were built in situ round a quadrant of the outer end to receive the foot of a slope proposed to be made of heavy granite blocks laid at the rate of four to one. The concrete blocks were from 59 to 91 tons each in weight, all but the heaviest being laid in one tide. The granite pier was also reinforced by a semi-circular skin of concrete 7 feet in average thickness and strongly battered, placed round the front, and brought to the level of high water spring tides. The footing blocks were 15 feet long, 12 feet wide and unless varied for the sake of foundation, three feet high in the face, sloping upward at a rate of four to one on the top. Each block was free to settle independently, but all were keyed together by splayed concrete joggles. Inside a part of the space within the quadrant, stones of the original work added to small granite were assembled and grouted, as far as funds permitted. This course was taken in default of the heavy granite (which would require special plant) necessary for the slope of this breakwater, where height is the great desideratum.

Pending consideration of works necessary for deepening the entrance to the harbour, which might possibly involve the extension of the breakwater, nothing more was done during the year 1896-97, except the completion of the break at the shore end, than appeared requisite to protect the unfinished superstructure just begun, and to preserve the lighthouse.

To this end fifteen blocks of concrete, forming aprons, were laid in position at the outer end of the work, between October 1896 and June 1897. A quantity of stone which had been swept round the point of the breakwater from the seaward to the harbour side was also replaced in position. Some of this stone was laid outside the heavy footing blocks, built in the previous year, and some was applied to restoration of the crest of the work at the back of the lighthouse. Breaches carried below the level of high water had been made by the sea at five or six points in the rubble mound between the lighthouse and the shore. An illustration of the violence of the seas which assail Negropoint breakwater is afforded by the removal of a stone, which weighed five tons, a distance of 76 feet in one winter. A marine dynamometer secured to the masonry of the lighthouse records the wave-force at 4,000 pounds and upwards per square foot.

In order to retain for natural protection, along the seaward face of the work, the littoral drift formerly swept by the waves over the top into the harbour, a break of piles, brush, stone and timber, 270 feet long, 8 feet wide and 4 feet high, begun in 1895, was completed in 1896-97, and was also extended 140 feet along the timber work that year with good effect. As a result of the construction of the break, the foreshore has advanced seaward, while the beach has increased in height and breadth.

Besides the general accretion of the beach, a tongue of drift, observed after the erection of the break to be near the shore, has at the foot of the talus on the seaward side, travelled 200 yards or more toward the outer end of the breakwater.

The formation of this spit, generally 10 feet wide and 2 feet high against the work, indicates that the drifting sand, gravel, shingle, &c., which formerly went over the breakwater into the harbour, will in time afford important natural protection to the work, and will reduce the length of the face to be maintained.

During the year 1897-98, as a measure of precaution, 152 yards of granite were obtained and deposited about the lighthouse for protection during the winter, while stones previously removed by the sea were replaced in position.

The advance of the foreshore rendered necessary in that year the enlargement of the timber break, which was extended a distance of 80 feet along the breakwater.

A small groyne was also built for the purpose of obtaining some information as to the quantity of the littoral drift near the shore end. To preserve the timber, the top of the piles and the knees of the break were given two coats of pitch.

One thousand and nineteen cubic yards of granite were supplied and laid in place in 1898-99; while 285 yards of the original stone of the work, displaced by the sea, were restored in position.

4-5 EDWARD VII., A. 1905

During 1899-1900, 414 cubic yards of granite were delivered and placed round the lighthouse. Six hundred and six cubic yards of dislodged stone were put back. Five concrete blocks, containing 52.1 cubic yards, were also laid in place.

In 1900-01, five blocks of concrete, aggregating 54½ cubic yards, were built in situ; 1,313 cubic yards of new granite were received and placed, while 1,893 cubic yards of the original stone of the breakwater, removed by the sea (which on November 8, 1900, made two clear breaches through the work) were restored to position. The timber break was also extended two tiers for a distance of 40 feet.

During the year 1901-02, 4,694 cubic yards of large stone, principally granite, together with 719 cubic yards of small stone, were delivered and placed in position. A number of large stones of the original work, amounting to 1,713 cubic yards, which had been dislodged by the sea, were restored to place by means of a floating steam derrick. Repairs were also made to the derricks and buildings.

During the fiscal year 1902-03, 4,603 cubic yards of large and 600 cubic yards of small stone, were delivered and placed at Negropoint breakwater. This material was chiefly applied to restoring the point of the breakwater to the original length; that is, by extending it 50 feet beyond the light-house. Although the stones were of large size, averaging a little less than 1½ cubic yards (while some attained the bulk of 5, 6 and even 7 cubic yards each) a part of the restored point was swept away by the heavy storms of the winter. Besides the new material added to the work, 2,201 cubic yards of the original stone of the breakwater, which had been dislodged by the sea, were, by standing or floating derricks, shifted and replaced either on the point of the breakwater or in the gaps made in the crest. The covering of the cribwork was also patched in places, the plant overhauled, and a derrick for hoisting boats erected near the shore end.

Until the work has either been extended to Partridge island or has received a permanent superstructure, constant repairs will be required.

In 1903-04, 12 blocks of concrete, aggregating 417 cubic yards, were made in place. Before the concrete was made, 124 cubic yards of large stone, taken from another part of the work, were placed round the lighthouse for protection. The break was raised 2 feet in height for a length of 175 feet.

The total expenditure to June 30, 1903, amounted to \$515,256.61.

The expenditure during the fiscal year 1903-04 was \$12,153.83.

#### PARTRIDGE ISLAND.

Partridge island is a rock eminence standing at the mouth of St. John harbour, and dividing the entrance into east and west channels. The island is devoted to quarantine and lighthouse purposes.

At the northern end of Partridge island, two narrow piers of cribwork, built many years ago, give shelter to the boat landing at the station. Between them, a substantial block of new cribwork, 50 feet long and 22 feet wide, begun and nearly finished in 1896-7, as a foundation for the disinfecting house, was completed in the succeeding year. A boat slip, intended for use at low stages of the tide, was partially built, a new mooring post put in, and minor repairs to the end of the west pier were made at the same time.

In the fiscal year 1902-03, the west pier of Partridge Island, 121 feet long and 17 feet wide, was raised by the addition of one tier of cross-ties, new stringers, covering and cap. A house 14 x 24 feet, was built for the boat of the medical officer and a new derrick (excepting the mast) was made for the purpose of launching or landing the boat, the weather being too rough in the winter to allow it to lie afloat.

From the east pier, 110 feet long and 20 feet wide, 11 fenders were removed and were replaced by new ones. The break was strengthened by the addition of 7 new knees; the boat-shed was shifted; the derrick rebuilt and a new cap laid. The top was also covered throughout with two thicknesses of 2-inch plank.

## SESSIONAL PAPER No. 19

During the fiscal year 1903-04, the approach of round timber cribwork, to these piers was reconstructed. This part of the work is 75 feet long on the centre line, 16½ feet wide on top and 14 feet high, with an additional platform 17 x 18 feet. The top was covered with hemlock plank and a hand-rail was put up round it. Ballast floors 30 feet in length, composed of double deals, 3 inches thick, were placed in the west pier and covered with 4 feet of ballast. Five bays of the inner face were sheathed to prevent the loss of ballast, for a height of 8 to 18 feet, and the ballast, which had been washed into the slip and obstructed the boat landing, was removed.

The total expenditure to June 30, 1903, amounted to \$6,777.39.

The expenditure during the fiscal year 1903-04, was \$500.

## PETIT ROCHER.

Petit Rocher, Gloucester county, is a farming, fishing and lumbering settlement on the south-western side of Baie des Chaleurs, 12 miles above Bathurst.

On May 31, 1904, a contract with Mr. Simon McGregor, of Dalhousie, was signed for the construction of a breakwater at Petit Rocher.

The work will consist of a main breakwater 209 feet long on the outside and an L placed at an angle of 74° 30' with the main part, 160 feet long on the outer face. The width on top will be 30 feet. At the nearest point the breakwater will be 450 feet from the shore and it will lie in from 12 to 19 feet of water at low water ordinary spring tides.

The contract price is \$32,900.

Construction had not begun up to the end of the fiscal year 1903-04.

Expenditure in calling tenders, &c., \$351.65.

## POINTE DU CHENE.

Pointe du Chêne, Westmoreland county, lies on the western side of Northumberland straits, on the south-east side of Shediac harbour. It is the terminus of a branch line of the Intercolonial Railway and of the steamer 'Northumberland,' running during the season of navigation from Summerside, Prince Edward Island.

The works at Pointe du Chêne consist of an inner and outer breakwater, each 600 feet long, with an opening between of 80 feet, and a ballast wharf (so-called) 200 feet long, connecting the outer breakwater with the Intercolonial Railway wharf.

During 1902-03, repairs were made to the outer breakwater, as follows : 6 pieces of loose boiler plate at the foot of the sloping face were removed and 50 lineal feet of face timbers inserted, over which, the 6 boiler plates and 3 new ones were laid; 2 fender-piles were driven and 3 pieces of sheathing of the sloping face were renewed. Chocks were inserted behind 12 fender-piles which had started out from the work and the tops of fenders projecting above the top of the work were cut off. The covering and stringers on a length of about 50 feet, damaged by a storm in the autumn of 1902, were removed and piled.

During the fiscal year 1903-04 repairs have been in progress on the damaged section of the outer breakwater, where, for a length of 109 feet, the old covering was removed, and the stringers were secured and covering relaid over a length of 31 feet. For 72 feet, on the outer face, the face timbers, sheathing, cross-ties and longitudinals were removed to near low water level, and the cross-ties replaced at intervals of 5 feet instead of 10 feet, as formerly; double face timbers, inner longitudinals, and stringers placed, and all the timbers of the face strongly screw-bolted together. Fifty feet of new covering was also laid on this section. The 72-foot portion has been raised 2 tiers higher than before and levelled; a further length of 80 feet was filled with ballast.

The expenditure during the fiscal year 1903-04 was \$1,746.68.

The total expenditure to June 30, 1904, was \$82,941.49.

4-5 EDWARD VII., A. 1905

## QUACO.

Quaco, St. John county, is on the northern coast of the Bay of Fundy, about 30 miles to the north-eastward of the entrance to St. John harbour. The bay is semi-circular, and lies open to the south-east, between Quaco Head and Macomber Point, some 2 miles apart, the breadth from a straight line drawn between these capes being about a mile. At the mouth of a small river discharging into the eastern end of the bay, a harbour of refuge has been formed by the construction of two piers, the eastern work 310 feet and the western 302 feet long. The harbour is dry at low water, and is only accessible for about six hours during each tide, to the coasting vessels which come to load timber or to seek shelter. Spring tides rise 30 feet; neaps, 23.

In 1896-97, repairs were made to the west pier for a distance of 149 feet, the sheathing of the sloping face, and several face-timbers being renewed with birch, 14 inches square, secured with screw-bolts, and a quantity of ballast being replaced. A couple of fenders and a ladder were also added. At the same time, the east pier was protected from the scour of the stream by brush and stone, 13 new fenders were applied, and the decayed tops of five others were replaced by sound material. Small repairs were also made to the covering and sheathing, and another ladder was provided. The whole expenditure in that year amounted to \$1,377.51.

In 1897-98, a sum of \$50 was applied to closing a small opening and strapping the angle of the west pier, which had been struck by a schooner.

In the fiscal year 1902-03, the sloping face of the east pier was reconstructed for a length of 70 feet, the outer end being 10 tiers in height, and the inner 7 tiers high.

In 1903-04, the repairs to this face were completed and were extended for an additional length of 19 feet, the whole being covered with sheathing. Four new mooring posts were inserted; a new corner fender was placed and the cap and covering received minor repairs. Some pieces of sheathing were also placed on the west pier.

The total expenditure to June 30, 1903, amounted to \$38,994.66.

The expenditure during the fiscal year 1903-04 was \$450.08.

## RICHIBUCTO.

Richibucto, Kent county, lies on the eastern side of Northumberland straits, about midway between the entrances to the Miramichi bay and Shediac harbour. It is the shire town of the county, a deal port and a terminus of the Kent Northern Railway.

The entrance to the harbour is between two sandy beaches known as 'North Beach' and 'South Beach.' The works originally proposed for the improvement of the harbour were two breakwaters, one to extend from the southern point of the North beach 1,200 feet, and the other to run in a north-easterly direction from the south beach, the object being to confine the water to one permanent channel and so scour the bar at the entrance.

In 1873 and 1874, the north pier was constructed for a distance of 1,200 feet. In 1876 it was found that the sea, during easterly storms, followed the inside of the breakwater, whirled around the upper end and endangered the beach. From 1880 to 1882, protection works were extended westward along the face of the beach to prevent erosion. Extensions in the same direction were continued during the years 1888, 1889, 1890 and 1891, for lengths of 200, 300, 94 and 140 feet respectively, making the works a total length of 2,158 feet, composed principally of brush, stone and piling.

Repairs to the inner part of the eastern section were undertaken during the years 1898-99, and at the end of June a section of 238 feet in length was nearly reconstructed, and another 593 feet partly repaired and raised 3 feet.



## SESSIONAL PAPER No. 19

In 1899-1900, the work commenced during the previous year was completed. Off the harbour face a pile, brush and stone groyne, 33 feet long and 15 feet wide, was constructed, and another of the same length rebuilt. Off the inner face two brush groynes each 191 feet in length were built, and off the northern face of the breakwater, near the outer end, a new breast-work 470 feet long and  $8\frac{1}{2}$  feet wide, consisting of pile frame work, sheathed on the outside and filled with brush and stone, was constructed.

In 1900-01, a steam derrick was built for pile driving and handling large stone, three additional stake and brush groynes, aggregating 262 lineal feet, were built off the inner face of the eastern section and a protection work 26 feet wide and variable in height, consisting of mattresses (formed of fascines and evergreen brush) pierced with piles and weighted with stone, was commenced on the harbour side of the outer section, 1,180 feet inward of the outward end and partially built outward for a distance of 492 feet.

In 1901-02, work was resumed in August with a view to continuing the protection work of the previous year a total distance of 866 feet, or out to within 300 feet of the outer end, and from the latter point, building an extension of 315 feet in length running in a south-easterly direction. One hundred and thirty feet of the extension was partly built and then, owing to the difficulty in procuring materials, work was closed down at the end of September. Plans were prepared and tenders called for the completion of the work.

The protection work is similar to that commenced during the previous year while the extension consists of brush mattresses placed on the bottom, weighted with small stone, pierced by three rows of piles, driven 5 feet apart longitudinally and 4 feet transversely, and finished with large stone, forming a top 12 feet wide and sides sloping 2 to 1.

In February, 1902, a contract was entered into for the completion of the unfinished extension and protection as above. Work was commenced in the latter part of May and at the close of the year four mattresses, 60 x 26 feet, had been placed for the protection work. Twenty piles were driven in the extension and 295 cubic yards of stone were delivered and placed in the work.

During the year 1902-03, the contract work was continued, and at the close of the year had been completed with the exception of delivering and placing about 855 cubic yards of slope and 350 cubic yards of core stone, adjusting some portions of the laid slope and filling in voids between the large stones.

Slight repairs were also carried on during the year by day labour, viz., protecting with brush and stone three sections at the back of the old work (immediately to the westward of that under contract) from undermining, the first section 50 feet long and 7 feet wide, the second 60 x 5 feet, and the third 70 x 3 feet. A quantity of stone left piled on one of the sections of the work was evenly distributed over a length of 600 feet and the tops of 150 piles and portion of the break timbers were given a coating of tar.

The contract work was completed on November 30, 1903, and the final estimate amounted to \$21,793.43, being the contract price, \$22,900, less \$1,106.57, for materials supplied to the contractors by the department.

The expenditure during the fiscal year 1903-04, amounted to \$583.

## ST. JOHN RIVER AND TRIBUTARIES.

The River St. John, proper, 450 miles long, takes its rise from sources in the province of Quebec and the state of Maine, at a reputed maximum altitude of 2,159 feet above sea level. Entering New Brunswick at the confluence of the St. Francis, a little below the borders of Quebec, it continues to be the international boundary almost to Grand Falls, and after flowing through the province for nearly 300 miles (by way of

4-5 EDWARD VII., A. 1905

the counties of Madawaska, Victoria, Carleton, York, Sunbury, King's and Queen's) discharges into the Bay of Fundy at St. John. Many tributaries, some being of considerable magnitude, are received by the main stream. Among them are the St. Francis, Madawaska, Green River, Grand River, Salmon River, Nackawick, Eel River, Keswick, Nashwaak, Oromocto, Jemseg, (Grand Lake), Washademoak, Belleisle and Kennebecasis. Except the last five, which are slightly tidal for some distance, they are fresh water streams.

The total basin from source to mouth is computed to be 26,000 square miles, an area almost equal to the whole of New Brunswick, but as a part of the watershed lies outside, only a little more than one-half the province is drained by the river. The St. John is considered navigable for vessels 15 feet in draught for a distance of more than 50 miles from the mouth, but no positive information on this point has yet been obtained. About 8 feet at low water can be carried to Fredericton, 84 miles from the sea, and 6 miles below the head of tide at Springhill. Three natural features of the river are remarkable; viz.:—

The tidal falls; Grand falls, and the annual floods.

Although in summer the fresh water stream between Woodstock and Fredericton is in places 400 to 1,000 feet wide, expanding at the latter place after reaching the tidal level to half a mile in breadth; yet the actual mouth of the river, a rocky gorge 400 yards long, immediately at the head of St. John Harbour, measures but as many feet across at high water. Here at low water, the level of the river is from 11 to 25 feet above the sea, and as the ordinary tides flow from 23 to 27 feet, the sea level at high water is from 8 to 13 feet higher than the waters of the river. Thus there are two falls at every tide; viz.: one outward and one inward, and vessels can only pass when the waters of the ocean and the river are on a level. This occurs only for a space of about 10 minutes during each ebb and flow of the tide; at all other times it is either impassable or extremely dangerous. (Admiralty Sailing Directions).

At Grand Falls, 223 miles from the sea, the whole volume of the river plunges over an almost perpendicular face of limestone 60 feet high, into a deep ravine 250 feet across, somewhat similar to the narrow pass at St. John. Flanked for nearly a mile by lofty rugged cliffs, the confined current dashes from the foot of the falls with excessive strength, mining deep pot-holes in the rocky bottom of the channel in the course of a further descent, estimated to be slightly less than the first. In the Harbour of St. John, ordinary spring tides are considered to rise  $25\frac{1}{2}$  feet. At the wharfs of the river steamers, a mile above the falls, while summer range is about 3 feet, the highest flood mark is given as 17 feet above extreme low water. At Oromocto, 73 miles from the sea where the tidal range is from 10 to 12 inches, the flood of 1887 reached a bridge 20 feet above low water. At and over, 200 miles from the sea, floods attain an elevation of more than 27 feet above summer level. By contrast the Tobique and St. Francis swell 9 and 6 feet respectively. After the first spate, due to the melting of the snow in the catchment basins of the Kennebecasis, Belleisle bay, and Washademoak, a secondary flood occurs, caused by the back water of the main river, which is fed from sources further north, and consequently later in thawing.

The harbour of St. John is open all the year around, but the river is ice-bound from November to April, an average period of 144 days. The water usually begins to rise in April, reaching flood pitch early in May, and maintaining a high level for two or three weeks. By the middle or end of July, the water has fallen to summer level, a stage lasting, with some variations dependent upon the rain fall, for about 60 or 70 days.

In addition to a little coal, a considerable quantity of cord-wood, and the ordinary food supplies yielded by the farms of a lengthly fertile valley, the trade of the river comprehends an abundance of valuable timber, fluctuating each season in amount, but generally at least equal to 135 million superficial feet annually. Most



## SESSIONAL PAPER No. 19

of the logs are floated loose down the tributaries and upper river to Fredericton, some being manufactured there and shipped coastwise or to the United States. The remainder, or major part, is towed from the provincial capital to St. John in rafts, giving employment to a fleet of tugs.

For the purpose of works, three divisions may be made of the river.

1. Tidal Navigation, for steamers and sailing vessels between St. John and Fredericton, 84 miles, requiring 11 feet at low water. Principal obstruction: the Oromocto shoals, about  $1\frac{1}{2}$  miles; the middle ground above Oromocto island, about 1 mile; and the shoals abreast Fredericton, rather more than  $\frac{1}{2}$  mile in length. The last are now dredged, but the other obstacles remain.

2. Inland Navigation, from Fredericton to Woodstock, a distance of about 65 miles, requiring  $3\frac{1}{2}$  feet at low water. The obstacles to inland navigation, besides boulders in some places, and perhaps bed rock at Meductic, are shoals of material more or less coarse, according to the strength of the current, varying in composition from sandy gravel to stones. The chief bars are at Springhill and Bear island; while Knapp's, Perley's, Coac, Nackawick, Belvisor, Moore's, Bett's, Dibblee's, and Bedell's Bars with Meductic rapids, constitute lesser obstructions, according to present information. Dividing above Springhill into two main channels, and from a general width of 350 yards opening to a stretch of  $1\frac{1}{2}$  miles between banks with a water-way increased by at least one-third, the river becomes dotted with eyots and shallows, two gravel shoals, known as the Russel and Chapel Bars, together, about  $\frac{1}{2}$  mile in length, compose the obstacle at Springhill. At Bear Island, 25 miles above Fredericton, in consequence of another division of the river into three channels aggregating 600 yards in breadth, a shoal of gravel and stones 1 mile long, giving 21 inches at low water, has been formed. Besides dredging, a long training dyke will be necessary for the maintenance of this channel. After reuniting below the island, the width of water-way in single channel is only 250 yards.

3. The Upper river, including with the tributaries all that part above Woodstock. This division is now used for the passage of timber only. On some of the tributaries beyond the reach of railways, supplies for the lumber camps are transported in tow boats, for which channels are required to be made and tow-paths provided.

### *Tidal Navigation.*

The tidal compartment of the River St. John comprehends, besides the main stream navigable by steamers which run daily between St. John and Fredericton, a distance of 84 miles, four tidal arms, all navigated by wood boats and regular passenger steamers, the extent of the whole tidal navigation being as follows:—

Main River St. John . . . . .	84 miles long.
Kennebecasis . . . . .	24     "
Belleisle Bay . . . . .	12     "
Washademoak Lake . . . . .	27     "
Grand Lake and Salmon River . . . . .	35     "

---

Total extent . . . . . 182 miles.

For the convenience of the steamers and other craft navigating the main river and its branches, the provincial government has erected a number of wharfs, towards which the department has made contributions amounting to one-half the certified cost.

During the year 1901-02, assistance was given to a number of these wharfs, \$3,000 being available for that purpose; while in the fiscal year 1902-03, \$4,813.14 was applied to the same object.

4-5 EDWARD VII., A. 1905

A contract was signed on January 22, 1903, for the construction at Oromocto of a public wharf, which was begun and completed in 1903-04. The new wharf is of round timber cribwork, 300 feet in total length, with an approach 20 feet wide on top, battered at the rate of 1 to 1 to the upper side, and sheathed. The pierhead is 70 by 35 feet on top. The work is filled with ballast. A road 130 feet long, was made from the old wharf to the new.

The expenditure during the fiscal year 1903-04 was \$6,558.75.

*Inland Navigation.*

Between Fredericton and Woodstock during the fiscal year 1903-04, rocks were removed from the shore at ten landing places used by the steamer 'Aberdeen,' viz.:—Burden's, Hazelton's, School-house, Kirke's, Moore's, Grosvenor, Hamilton's, Oldham's Eddy, Meducric, Woodstock.

Besides some earth, 94 cubic yards of large stone and 299 cubic yards of small stone were removed.

The expenditure amounted to \$394.04.

Tobique river, Victoria county. Between Plaster Rocks and the Forks, a distance of 34 miles, channels 50 feet wide and 2 feet deep, aggregating almost 2 miles in length, were made for the passage of tow-boats through 22 shoals, viz.:—Nicholas, Cumliffe, Loup Cervier, Long Island, Caribou, Diamond Island, Robinson, Gaunce's, Blue's Island, Harris Island, Knowlton, Everett, Cameron, Gilbert Blue, Blue Mountain Brook, Jenkins, Haley Brook, Swift Island, Mink Cove Island, Barker.

Tow-paths were also cut for 120 rods, while stumps and trees along the bank were cut and removed wherever necessary.

The expenditure amounted to \$857.

Little Tobique river, Victoria county. On the little Tobique, improvements to facilitate the passage of tow-boats were made by clearing channels through seven bars, varying from 100 to 300 feet in length. These channels were made 25 feet wide and 2 feet deep below low water level. Five tow-paths, one-fourth of a mile in length and 16 feet wide, were also cut, and large trees, constituting obstructions to towing, were removed by blasting. The improvements extended from Tobique Forks to Red Brook, a distance of about 26 miles.

The expenditure amounted to \$399.

Serpentine River, Victoria county. On the Serpentine, 13 rocks were blasted from McCarthy's Falls, and as many more between that and Little Falls. Thirty-five boulders, equal to 60 cubic yards, were also removed by blasting between the head of Dead Water and the dam at the foot of Serpentine lake, a distance of 10 miles. A pier at Serpentine Falls, 20 feet long and 14 feet high, was sheathed with 6-inch birch. A new pier, 64 feet long, 50 feet wide and 9 feet high, was built at the islands at the foot of the falls; and another, 40 feet long, 20 feet wide and 8 feet high, partly ballasted, was built at the head of Dead Water, 2 miles above the falls.

Main River below Aroostock, Victoria county. In the main River St. John, near the mouth of the Tobique, rocks which were impediments to the passage of logs, were blasted. From one rock a portion, 60 feet long, 22 feet wide and 2 feet high; from another a portion 90 feet long, 45 feet wide and 7 feet high; and from a third a part 30 feet long, 24 feet wide and 2 feet high, were removed. A tow-path 650 feet long and 10 feet wide, was also cut on the east side of the river below the Tobique rocks. In this a culvert of cribwork was built with a 10-foot opening.

The expenditure amounted to \$299.82.

Main River, Victoria county. Between the mouth of Salmon river and the Aroostock, 33 cubic yards of rock were removed by blasting at Baker's Reef, and 147 cubic yards at Little river.

The expenditure amounted to \$200.

## SESSIONAL PAPER No. 19

Grand Falls to Salmon River, Victoria county. Between these points, fifteen rocks, containing 148 cubic yards, were removed by blasting.

The expenditure amounted to \$200.

Grand Falls, Victoria county. At Grand Falls, the whole of the River St. John takes a sudden plunge of 80 feet into a narrow gorge. At the foot of the falls, an eddy, which retains a great deal of the timber passing over, is formed by a projecting point of rock. To reduce the eddy, a considerable part of the point has been removed. In June and July, the blasting covered an area of 100 feet long and 80 feet in extreme width at the base, the average depth of rock being 12 feet. In August and September, 109 cubic yards of rock were blasted from the same place.

The expenditure amounted to \$900.

In former times, a jetty had been constructed above the falls to deflect the current to the east side, and to throw the logs clear of the eddy below. A work of similar character was built during the fiscal year 1903-04, a little nearer the falls. This cribwork pier is 208 feet long on the centre line, is 30 feet wide on top and stands 4 feet above flood level.

The expenditure on this work amounted to \$4,710.07, making a total during the year at Grand Falls of \$5,610.07.

Grand River, Madawaska county. Improvements were made on this river for a distance of fifteen miles. The work consisted in removing an old dam two miles from the mouth, in cutting tow-paths 12 feet wide and in clearing the river from obstructions.

The expenditure amounted to \$250.

Green River, Madawaska county. On the Little Forks of Green river, 30 cubic yards of rock were removed by blasting, and a cribwork pier, 50 feet long, 15 feet wide and 6 feet high, was built at the second falls of Little Forks about two miles from the mouth. At this point, fourteen rocks, containing 158 cubic yards, were removed by blasting, and a tow-path, 748 feet long and 20 feet wide, was cut round the falls.

The expenditure amounted to \$250.

Iroquois River, Madawaska county. The Iroquois discharges into the St. John two miles below the town of Edmundston. At the falls of the Iroquois, fifteen miles above the mouth, the improvements made during the year consisted in building a dam, 68 feet long and 4½ feet high; a pier, 16 feet high and 11 feet wide; and another pier, 60 feet long, 7 feet high and 5 feet wide, all of round logs ballasted with stone. For the passage of timber a sluice 85 feet long, 6 feet high and 10 feet wide, was also made.

The expenditure amounted to \$275.76.

Edmundston, Madawaska county. In the town of Edmundston for protection from the effect of the floods occasionally caused by the back water of the St. John, a cribwork dyke, 413 feet long, 15 to 16 feet high, 14 feet wide at the bottom and 9 feet at the top, was built and ballasted.

The expenditure amounted to \$4,909.81.

St. Francis, Madawaska county. On the St. Francis, channels 15 feet wide and 2 feet deep, were excavated through the following shoals :—

Grew Bar, 175 feet long; Hab's Bar, 330 feet long and two at Jones' Bar, 330 feet long.

At Cross Lake Rapids, a channel, 300 feet long, 15 feet wide and 2 feet deep, was made by the removal of rocks. A tow-path 16 feet wide, was cut round Glacier lake, a distance of five miles.

The expenditure amounted to \$300.19.

Exclusive of the cost of dredging, the total expenditure on the River St. John to June 30, 1903, amounted to \$152,545.34.

The whole expenditure for the fiscal year 1903-04, including \$794.31 for the pay and expenses of the permanent foreman of the upper river was \$16,788.94.

4-5 EDWARD VII., A. 1905

## SHIPPEGAN.

Shippegan Gully, Gloucester county, a passage between Shippegan island and the mainland, is situated on the western side of the Gulf of St. Lawrence, and is distant 3 miles south-east of Shippegan village, the terminus of the Caraquet Railway, and 65 miles east of Bathurst, the shire town of the county.

To improve the entrance to the harbour, the department in 1875 commenced the construction of a breakwater on the eastern side of the gully, and a dam 890 feet long to close what is known as the eastern gully, distant three-fifths of a mile eastward of the main gully.

From 1875 to 1890, the works were confined to the eastern side of the entrance, and at the latter date consisted principally of a pier or breakwater at the point, and a breastwork along the northern face of the beach, the whole having a length of 1,200 feet, one-third of which was constructed of cribwork and the remainder of brush and pile works.

In 1880-81 and in 1883, the dam was repaired, raised and strengthened, and during the latter year the pier was also repaired and extended 120 feet.

General repairs were again made during 1883-84 and 1886-87. In 1888-89 the work was further extended 50 feet by the construction of an additional block at the outer end.

During 1890-92 a contract was entered into for the construction of a breakwater 1,194 feet long, off from the western beach, consisting of a pile work filled with brush and stone; 137 feet of the outer portion of the eastern work was rebuilt at the same time.

In 1892-93 and 1893-94, repairs were continued, and in 1897-98 plans were prepared and general repairs to all the works undertaken. These were continued until the winter of the following year, during which time the dam was raised 3 feet over a distance of 452 feet and extended westerly 185 feet. An apron of brush and stone 375 feet long was also built on the south side of the dam, and on the northern side 10 rows of stakes or hand piles were driven, forming groynes for the purpose of arresting the drift of seaweed and sand, thus stopping the leaks, and at the same time protecting and strengthening the dam. Between the dam and Fruing & Co.'s fishing establishment, 4 hurdles, 155 feet in total length, 2 pieces of brush, stake and gravel work, one 12 x 60 x 3 feet, the other 13 x 46 x 4 feet, were constructed in order to preserve the beaches and confine the roadway to one course. Eastward of Fruing & Co.'s establishment, a pile-bent structure, 120 feet long, filled in with brush and stone, and a further length of 119 feet of brush and stone alone was built, to close an opening in the harbour side of the beach. Near the inner end of the east pier, 63 feet of pile-bent work was constructed, and between this work and the pierhead, one branch of 22 feet, one of 62 feet and another of 70 feet, were closed with pile-work filled in with brush and stone. A gap of 90 feet in the pier-head was closed by the partial construction of a close-faced cribwork block and a pile structure, each 45 feet in length, and other minor repairs were made. On the west side of the gully, 62 piles were driven at the outer end of the breakwater, and 180 feet refilled with brush and stone. Along the west beach, a breastwork 1,669 feet long of stakes, piles, brush and gravel, was constructed to close runnels and raise the crest of the beach, and an opening of 43 feet between sand dunes was closed with stakes, brush and gravel.

During 1899-1900, the gap of 90 feet in the east work was completed; 455 feet were reconstructed with fascines, brush and stones. One pile groyne, 26 feet long, was built on the harbour side of the work, and another, 220 feet long, on the seaward side, with brush, stakes and gravel. The dam was raised 3 feet with brush and stone for a distance of 495 feet. An apron 476 feet long and 8 feet wide was placed along the southern side, and an extension of 17 feet was made to the eastern end, from

## SESSIONAL PAPER No. 19

which latter point, a groyne, 180 feet long, of stakes, brush and stone, was constructed nearly at right angles to the dam.

In 1900-01, a new pile pier-head, 44 x 34 feet, was built at the outer end of the eastern work, and breastworks, 200 feet and 92 feet long respectively, were built on the outer and inner sides of the breastwork, built the previous year on the west beach. One hundred and ninety feet of the breakwater was sheathed horizontally on the harbour side between high and low water, the interior of the work was strengthened by braces and an extension of 100 feet was made to the inner end.

During 1901-02, on the east side, the outer block of the breakwater was ballasted, one pile-groyne 48 feet long was constructed and another partially so. The work to the east of Fruing & Co.'s was sheathed with 3-inch deals, and between this and the dam, a distance of 1,826 feet, a beach protection work was built. The dam was raised  $3\frac{1}{2}$  feet over a distance of 350 feet. On the west side the outer 130 feet of the breakwater was strengthened with braces, piles were driven at its outer end, horizontal sheathing was placed for a further distance of 130 feet on its eastern side, and the outer 30 feet was partially filled with brush and stone. Also, on the harbour side of the breakwater, a groyne 88 feet long was constructed, and an extension of 175 feet was made to the inner end by driving close-piles, backed with brush and stone.

During 1902-03, on the east side, a gap 121 feet long, immediately to the east of Fruing & Co.'s was closed with a work built of piles, brush and stone. Two new groynes, each 40 feet long, were built, and two increased in height. On the west side, the breastwork of stakes, brush and gravel, was extended westerly 1,200 feet, and slight repairs were made on the western breakwater.

During the fiscal year 1903-04 : On the east side, two groynes, one 40 and the other 29 feet long, were built on the harbour side of the work, with piles faced with 6-inch hardwood ; two groynes, whose outer ends had been raised by the ice, were shortened 12 and 8 feet respectively ; 500 feet of light breastwork, formed of posts in two rows 8 inches apart, filled between with brush, was built on the seaward side, to cause an accumulation of sand ; 37 feet of the same construction was built as an extension to the work on the harbour side to the east of Fruing & Co.'s establishment, and the cross-ties of the second block from the end of the east breakwater were levelled preparatory to being covered with plank.

On the west side, 875 loads of sand and gravel were carted to fill a low spot beside the breastwork on the west beach, where the tide was working through. The ends of three groynes which had been raised by the ice, were cut off for 30, 10 and 15 feet respectively. Fifty pieces of new plank were laid on the western breakwater. Its outer corners were strengthened by the addition of 6 iron straps and 60 cubic yards of brush and 40 of stone were placed on its outer end.

A survey of the entrance and channel within the gully has lately been made, by which it is found that the depth at the entrance is gradually increasing. At the commencement of the works the depth was only  $3\frac{1}{2}$  feet, in 1898 it was nearly  $6\frac{1}{2}$  feet, whereas at the present time about 8 feet is found at low water spring tides.

The expenditure for the year 1903-04 amounted to \$1,097.85.

The total expenditure to June 30, 1904, was \$88,054.29.

## TRACADIE.

Tracadie, Gloucester county, is situated on the Gulf of St. Lawrence, about midway between Shippegan Gully and the entrance to Miramichi bay. Its harbour is one of the several large lagoons on the east coast of New Brunswick, separated from the sea by long sandy beaches and entered only by narrow channels termed gullies. The harbour of Tracadie is entered from the Gulf of St. Lawrence by what is known as the 'north' and 'south' gullies.

4-5 EDWARD VII., A. 1905

The harbour is some six miles in length by a quarter to one mile or more in width, but except in the river channels (north and south Tracadie rivers) and in the channels entering from the gullies, it is quite shoal, being almost dry at low water spring tides.

In 1894, in order to provide shipping facilities for the district, which is a large and populous one, containing upwards of 2,000 inhabitants, the department constructed a wharf 1,430 feet long and 25 feet wide, consisting of blocks and spans as follows :— A shore block or approach 250 feet long, twenty-eight blocks 20 x 25 feet, a pierhead or outer block 40 x 25 feet, and twenty-nine spans or openings of 20 feet. The work was constructed of open cribwork of round timber and the top covered with 3-inch plank.

During 1900-01 a cribwork block 55 feet long and 27 feet wide on top, lying immediately beyond the outer end of the departmental work, was repaired and connected with the main structure which was also repaired.

During the year 1901-02, the laying of diagonal covering for a width of 10 feet was continued and completed over a distance of 1,318 feet.

During the fiscal year 1903-04, repairs were again necessary, as eight of the blocks had parted above the ballast floor during an unusually high tide, being raised from 3 inches to 1 foot. From seven of these the ballast was removed and they were set back into place and secured with iron rods hooked around the timbers below the ballast floor and bolted to the timbers above. The eighth block which was only slightly displaced was merely secured with rods.

In addition 200 cubic yards of ballast was placed in the work and twenty-four fenders, 425 lineal feet of cap timbers, 65 lineal feet of 3-inch covering 25 feet wide, and 19 lineal feet of 2-inch covering 10 feet wide, were renewed.

The expenditure for the fiscal year 1903-04, was \$844.66.

The total expenditure to June 30, 1904, was \$7,163.04.

#### TYNEMOUTH CREEK.

Tynemouth creek, St. John county, twenty-one miles east of the city of St. John, is one of the several small havens, dry at low water, found on both shores of the Bay of Fundy which are only useful on account of the high range of tide. Tides rise here about 28 feet. Inside a beach of gravel and stones, is a tidal basin, accessible to small vessels at high water by an opening at the east end of the beach.

In 1874-75, the department built a substantial cribwork pier on the rocky fore-shore of the eastern cliff to prevent vessels from taking ground on that side.

In 1882-83, another work to maintain the channel was built on the point of the beach on the opposite side.

In 1894-95, a sum of \$225 was applied in replacing some of the fenders and covering of the east pier and to removing part of the rocky ledge obstructing the channel.

In 1897-98, a sum of \$510 was expended in removing 813 cubic yards of shingle from a shoal obstructing the entrance, and in effecting minor repairs to the west pier.

The harbour is constituted by a long beach stretching from the western side of the inlet. By heavy gales, the crest of the beach was cut down almost 5 feet for a length of 300 feet.

In 1900-01, to prevent this beach from being lowered and the harbour from being endangered, a protection work of piles and planks from which three groynes 41 feet long, projected, was built for a length of 345 feet.

At the cribwork groyne of the west pier, a block 68 feet long over all, and 16 feet wide, repairs were made for a length of 52 feet; new ballast floors were inserted; new ballast was placed in the work; and the top was given new stringers, and in great part, new covering, besides ten new fenders. The remainder of the covering of the west pier was also patched in places.



## SESSIONAL PAPER No. 19

At the east pier, chocks were inserted between started face-timbers to retain the ballast; 13 new fenders were placed and the break was repaired.

During the fiscal year 1903-04, the main body of the west pier was raised 2 feet for a length of 116 feet; was ballasted for a depth of 5 feet, and was newly covered. The spur of the west pier was also raised two tiers, ballasted and covered; while the inner end was levelled up and raised one tier. Three new fenders were added to the east pier, and loose fenders were bolted. The road approaching this pier was also repaired for a distance of about 50 yards. The shoal obstructing the entrance to this harbour was removed, the channel being made 45 feet wider and 2 feet deeper than before by removing the bar for a maximum length of about 300 feet.

The total expenditure up to June 30, 1903, amounted to \$8,241.57.

The expenditure for the fiscal year 1903-04 was \$1,001.

## UPPER SALMON RIVER.

Upper Salmon River, otherwise called Alma, the terminus of the Alberta Southern Railway, is situated in the county of Alberta, 5 miles from Rocher Bay, and 2 miles from Herring Cove. From Alma, deals are either sent in coasting vessels to St. John for shipment, or are transported directly to sea-going vessels lying at the anchorage off Grindstone island, or in the roadstead off Herring Cove. For protection of the coasters lying inside the river-mouth at the private wharfs, which afford 4 or 5 berths, the department built in 1883-4 a breakwater which was extended to a total length of 420 feet. By position the work lies across the path of the littoral drift. In consequence, the foreshore has advanced nearly 500 feet on the weather side, and the drift, having fully charged the outside of the breakwater, is now working round the end. Accordingly, inside the point of the breakwater a bar 11 feet in height was formed which extended nearly across the mouth of the river. By means of a temporary groyne, inducing scour, the channel, which had become contracted to a width of only 34 feet, was increased during the months of April and May, 1900, to 125 feet in breadth, but the shoal was soon formed again.

On August 6, 1902, a contract was let for the construction of an extension 104 feet in mean length and 30 feet wide on top, of close face cribwork, with a sloping face on the weather side of the breakwater. By the end of the year excavation for the foundation had been made and the timber work begun.

By the end of the year 1903-04, the work had been brought up to the 23rd tier or 4 feet below the level of the finished top.

The total expenditure to June 30, 1903, amounted to \$11,384.70.

The expenditure for the fiscal year 1903-04 was \$3,455.

## WILSON'S BEACH.

At Wilson's Beach, a fishing settlement in a slight indentation of the coast on the west side of Campobello, an island in the Bay of Fundy forming part of the county of Charlotte, a breakwater 373 feet in length was built to shelter the cove by the joint contributions of the federal and local governments between the years 1874 and 1878. The outer arm of the breakwater having become dilapidated, and the cove having been silted up, preparations were made in 1899-1900 to restore the inner end 284 feet in length, and the repairs were nearly completed in the following year, 1900-01. A quantity of materials was also procured for the construction in deeper water of the dismantled outer end.

In 1901-02, the repairs to the inner end were completed. Crib No. 1 of the part to be reconstructed, 80 feet in mean length and 36 feet wide, consisting principally of hardwood timber, was built, placed in position and ballasted. Crib No. 2, 74 x 40 made of similar materials, was also begun and at the end of June had been built to a height of 8 tiers. A quantity of timber was also delivered.

4-5 EDWARD VII., A. 1905

In the fiscal year 1902-03, crib No. 1 was increased 130 feet in length on the outside and raised at the inner end to the 26th, and at the outer to the 23rd tier. Crib No. 2 was brought up to the 23rd tier.

In 1903-04, the superstructure of crib No. 1 was completed; while the top of crib No. 2 was brought up to the full height with the exception of the benching required to be left for making the connection with crib No. 3, which was begun and brought up to the 10th tier in height.

The total expenditure to June, 30, 1903, amounted to \$30,678.69.

The expenditure for the fiscal year 1903-04 was \$8,055.15.

## PROVINCE OF QUEBEC.

### AMHERST.

Amherst village is situated at the eastern end of Amherst island, one of the Magdalen islands, in the Gulf of St. Lawrence, and forms part of the electoral district of Gaspé.

Amherst is a port of considerable importance. Two steamers plying between Pictou, Souris and the Magdalen islands call twice every week at Amherst landing pier.

The landing pier commenced at Point Shea in May, 1900, and built to a length of 188 feet during the fiscal year 1901-02, was extended 250 feet during the fiscal year 1903-04, making it together with the 50 feet built from the outer face of the roadway to the side of the cliff a total length of 488 feet, with an average width of 26½ feet and an average height of 25 feet. The outer end of the wharf stands in 17 feet at low water spring tides.

The whole is built of cross-face cribwork protected every 8 feet by hardwood fenders. For the whole of the superstructure from 3 feet below low water mark, birch face-timbers, 12 x 12 inches were put in the work.

The cribwork substructure settled down from 4 to 6 feet in sand and clay. On the outside or easterly side a quantity of ballast stones had to be placed so as to prevent the undertow from undermining the work.

The approach of 625 feet in length built in May and June, 1901 being altogether too low and too narrow, and besides having been partly carried away had to be rebuilt, widened to an average of 26 feet and raised to 8 feet above low water mark, the top being levelled with sand and gravel.

The expenditure during the last fiscal year is \$4,476.32.

### ANSE À BEAUFILS.

Anse à Beaufils, in the county of Gaspé, is on the Gulf of St. Lawrence, six miles south of Percé.

The sum of \$496.80 was expended towards the removal of rocks from the harbour.

### ANSE AUX GASCONS.

Anse aux Gascons, is situated on the north shore of Baie des Chaleurs, in the county of Bonaventure.

During the year 1903-04 the sum of \$2,765.50 was expended for the construction of an approach to the breakwater at this place.

### ANSE DU CAP.

During the last fiscal year the sum of \$100 was expended towards the removal of rocks from the harbour of Anse du Cap, in the county of Gaspé.



## SESSIONAL PAPER No. 19

## ANSE ST. JEAN.

Anse St. Jean, is situated on the north shore of the River Saguenay, twenty-five miles above its mouth.

The public landing pier at this place was commenced by the local government in 1876, and continued by federal government in the years 1879-80, 1880-81.

Total expenditure since confederation, \$4,752.63.

Paid by the local government and municipality, \$1,700.

In 1881-82, the upper part of the pier was completed at the expense of \$1,091.72. the pier is 366 feet in length 26 feet in breadth up to the head which is 50 by 40 feet and 33 feet in height. At low water spring tides there is a depth of  $7\frac{1}{2}$  feet at the outer end of the pier.

1884-85, the pier was repaired. Expenditures, \$94.45.

During the year 1886-87, the sum of \$865.28 was expended on the construction of a movable slip, building an open shed 40 by 28 feet and renewing part of the flooring.

In 1890-91, the portion of the wharf which settled in the spring of 1889, was raised from  $2\frac{1}{2}$  to 3 feet over a length of 135 feet and the flooring renewed, a quantity of stone was placed in the eastern portion of the wharf and the shed was repaired.

Expenditure, \$999.42.

During the years 1892 up to 1897, repairs were made, the flooring completed and the eastern face of the cribwork was sheathed with an expenditure of \$1,963.75.

During the fiscal year 1899, a landing slip was built on the eastern side of the pier, the slip is 75 feet long at the base, 25 feet on the top and 14 feet wide, filled with stone ballast, the planking of the pier was renewed on a length of 200 feet at a cost of \$1,000.27.

In 1899-1900, 50 feet of the outer end was sheathed, and 200 feet of flooring was renewed with 3-inch spruce and the shed was painted.

Expenditure, \$501.

During the year 1902-03, the work done consisted of general repairs to the flooring, a new slip, sheathing and repairs to the shed.

Amount of expenditure, \$657.91.

During the fiscal year of 1903-04, a pier 24 feet in length by 50 feet in width and 34 feet high, was sunk in 13 feet depth at low water spring tides. The pier is built of round logs open-faced, with fenders of 8 by 10 inches every 8 feet and sheathed on the two outer corners with 8-inch timber.

The stringers 10 by 11 inches, are ready to receive the flooring.

Spring tides rise 17 feet; neaps, 10 feet.

Amount expended is \$3,048.04.

Total amount expended to July 1, 1904, was \$17,190.02.

## BAIE ST. PAUL.

Baie St. Paul, is situated on the north shore of the St. Lawrence, in the county of Charlevoix, sixty miles below Quebec.

During the fiscal year 1903-04, extensive repairs were made to the west side of the wharf where the face timber had been broken by ice during a heavy storm. In the spring of 1903, the damage extended over a length of 125 feet and 12 feet high.

A number of large boulders were also removed from the channel leading to the wharf.

The expenditure during the fiscal year, 1903-04, was \$3,279.66.

## BELŒIL.

Belœil is an incorporated village in Verchères county, on the north side of the Richelieu river, and a station on the Grand Trunk Railway, 21 miles north-east of

Montreal. It has an express office, one store, two hotels, one saw mill and the works of the Hamilton Powder Company. Population, four hundred. The Richelieu river leaves Lake Champlain at its northern extremity, and after a course of 80 miles, enters the St. Lawrence at Sorel. It is broader and more rapid in the former than in the latter part of its course. The Richelieu forms an important part of the navigation between the St. Lawrence and the Hudson river.

South of the Grand Trunk Railway bridge, which crosses the river at Belœil, the government built a number of piers and booms on both sides of the channel to facilitate the passage of steamers and barges coming down the rapid current of the river and going through the narrow passage of the draw-bridge, and to prevent them from being carried away into shallow water. There are eight piers, or four on each side of the channel, distant from 80 to 100 feet from one another. From 1885 until 1888, some slight repairs were made to the booms at a cost of \$353.43. In 1890-91 three of the piers were rebuilt from the water line and some slight repairs were made to the booms at a cost of \$1,500.35. In 1891-92, two other piers were rebuilt from the water line at a cost of \$1,193.38. In 1895-96 some slight repairs were made to the booms at a cost of \$144.79.

In 1896-97, it was found that the guide piers on the west side of the river, built many years ago, were in such a bad condition, that they could not be properly repaired, and an entirely new line of guide works was adopted. It was decided to build a solid crib-work wall from the Grand Trunk Railway pile abutment upwards, following the line of a 15-degree curve for a distance of 337 feet; to remove the four old piers and booms, and to dredge a wider channel for the free passage of boats.

The work carried out by days' labour, was not completed on June 30, 1904.

The expenditure during that fiscal year was \$1,261.50.

#### BERGERONNE'S WHARF.

Bergeronnes, Saguenay county, is on the north shore of the River St. Lawrence, 18 miles below Tadousac.

This place contains, one church, post office, telegraph office, four saw-mills and two cheese factories.

During the year 1903-04, a landing wharf was commenced in the River Grandes Bergeronnes; it is to be 20 by 30 feet, and 17 feet high, built of open face round timber cribwork and ballasted with stone.

Spring tides rise 16 feet; neaps, 9 feet 6 inches.

The amount expended was \$239.30.

#### BERTHIER.

The village of Berthier, in the county of Montmagny, is on the south shore of the River St. Lawrence, 29 miles below Quebec.

A large traffic in farm produce is made through the coasting steamer 'Champion,' which plies daily between Quebec and Berthier. Spring tides rise 21 feet; neaps, 13 feet.

During the fiscal year ended June 30, 1904, the sum of \$447.96 was expended in sheathing the east side of the shore end of the wharf, on a surface of 3,270 sq. feet, with tamarack 3 inches thick; the top planking was also repaired.

#### BOIS BRULÉ.

Bois Brûlé, county of Gaspé, is a small fishing cove some five miles below or south of Douglstown.

## SESSIONAL PAPER No. 19

As the beach for the landing of the boats was wearing away, a training pier was decided upon. The pier is to be 90 feet long, 22 x 22 feet wide and 12 feet high. Sixty feet of the outer end of the pier has been built.

The expenditure at the end of the last fiscal year was \$1,704.24.

## BONAVENTURE EAST.

Bonaventure East, is in the county of Bonaventure. During the year 1903-04 a contract was let to build a breakwater at this place for the sum of \$15,690. It is to be 700 feet long by 20 feet wide.

The work done at the end of the fiscal year 1903-04 amounted to \$5,000.03, and was not completed.

## BON DÉSIR.

Bon Désir, in the municipality of Les Bergeronnes, is situated on the north shore of the St. Lawrence, at five miles east of Les Bergeronnes village.

The Bay of Bon Désir is much frequented by schooners loading cordwood and timber, the entrance to the bay is obstructed by boulders, some of the most dangerous of which were removed.

The amount expended was \$191.

## CACOUNA.

Cacouna, one of the best known and most frequented summer resorts in Canada, is situated on the south shore of the St. Lawrence, in the county of Temiscouata, 120 miles below Quebec.

Spring tides rise 20 feet ; neaps, 12 feet.

During the fiscal year ended June 30, 1904, an addition to the wharf was built ; the crib is close-faced, filled with stone ballast, 75 feet in length, 30 feet wide, on a mean height of 19 feet. The work was done by day labour, during the months of October and November, at a cost of \$2,298.35.

## CAP DE LA MADELEINE.

Fifty dollars were expended towards the removal of some 60 cubic yards of shale along the beach on the west of the outlet of the Madeleine river, county of Gaspé.

## CAP DES ROSIERS.

The sum of \$101.19 was expended towards the removal of 20 cubic yards of solid rock and 100 cubic yards of large boulders, so as to allow fishing crafts to come ashore in safety, at Cap des Rosiers, county of Gaspé.

## CAP SANTÉ.

Cap Santé, the chief town of the county of Portneuf, is situated on the north shore of the St. Lawrence, five miles below Portneuf and thirty-one miles above Quebec. Spring tides rise  $14\frac{1}{2}$  feet, neap tides,  $8\frac{1}{2}$  feet.

During the fiscal year 1903-04, minor repairs to the amount of \$16.20, were made to the wharf at this place.

## CHAMBORD.

Chambord, in the county of Chicoutimi, is situated on the south-east side of Lake St. John.

Chambord is the junction for the Quebec and Lake St. John Railway, of the Roberval and Chicoutimi branches.

4-5 EDWARD VII., A. 1905

During the fiscal year, a certain quantity of timber was purchased in view of the construction of a wharf at this place.

The amount expended was \$1,541.67.

#### CHAMPLAIN.

Champlain, a post village in Champlain county, situated on the north shore of the River St. Lawrence, on the Canadian Pacific Railway, 15 miles east of Three Rivers. It contains a Roman Catholic church, 2 telegraph offices, 9 stores, 2 hotels, 1 saw-mill, 1 butter factory, &c. Distance from station to village  $1\frac{1}{2}$  miles. Population of village, census of 1890, 810; of parish, 1,180.

With a view of affording much needed facilities, by water-way, to the trade of the surrounding localities, it was decided to build a public wharf at that place.

In May, 1904, the old wharf of Mr. H. Arcand, together with a piece of land about  $\frac{1}{2}$  arpent in area, on the shore of the river, and a right of way from the public road to the wharf, was purchased for the sum of \$1,000. On June 30, materials consisting in timber, lumber, stone, crushed stone, iron, cement, &c. had been procured for the sum of \$4,628.07.

#### CHICOUTIMI.

The town of Chicoutimi, in the county of the same name, is situated on the south shore of the Saguenay river,  $71\frac{1}{2}$  miles above Tadousac, at the head of navigation. The Richelieu and Ontario Navigation Company's boats call two to six times a week at the Chicoutimi pier during the season of navigation, with passengers, freight and mails.

At the mouth of the River Chicoutimi, about 1 mile above the pier, there is an extensive lumbering establishment belonging to the Messrs. Price Bros., who export large quantities of sawed lumber, laths and shingles, to Europe and elsewhere, in ocean vessels and large schooners which ascend the Saguenay to the town. There is also the Chicoutimi Pulp Company, which has two pulp mills of a capacity of 78,000 tons a year, the Chicoutimi Pulp Company loads every year an average of 20 steamers.

Construction.—The landing pier was commenced in 1873 by the St. Lawrence Tow Boat Company, and completed by the Dominion government to whom it was handed over in 1874, at a cost of \$14,193.40. From 1874 to 1882 inclusively, it was extended and improved at a total cost of \$2,863.73. The pier was then 282 feet long, and consisted of an approach 248 feet long and 30 feet wide, and of a head block 34 feet long and 127 feet wide forming two wings respectively, 70 feet and 27 feet wide. On the upper or 70 feet wing was a combined waiting room and an office 20 feet square.

The depth of water at the end of the pier which was originally 10 feet at low water spring tides, was then reduced to 7 feet by the accumulation of slabs and sawdust from the mills at the mouth of the Chicoutimi river.

In 1883 the shore end portion of the approach on a length of 38 feet was embedded in an embankment upon which the station and sheds of the Chicoutimi branch of the Quebec and Lake St. John Railway are now erected. The length of the approach was thereby reduced to 210 feet by filling in with slabs the whole space, 210 feet in length, between the upper or 70 feet wing and the shore, and a storehouse 40 feet long and 24 feet wide was erected on this extension at a total cost of \$2,145.84. The filling was not however carried up to the level of the top of the pier until 1885, when the extension was floored in a manner similar to the rest of the work. A separate waiting room was also erected on the lower or 27 foot wing.

The amount expended was \$2,042.11.

In 1890, a cribwork retaining wall 14 feet wide was commenced along the slab filling built in 1884, and the flooring was repaired where required at a total cost of \$1,005.81.

## SESSIONAL PAPER No. 19

In 1891, the cribwork retaining wall was completed, a shed 28 by 29 feet built at the southern end of the pier and the flooring was repaired at various places at a cost of \$1,802.70.

In 1897 the pier was again widened by the addition of cribwork 30 feet wide along its lower or eastern face, from the lower or 27 foot wing to shore, a distance of 210 feet. The cribwork was fully ballasted and floored with 3-inch tamarack planks and twenty-five fenders were placed along its face.

The pier was also sheathed for a length of 50 feet along its northern face in order to complete the sheathing all round the work. The total expenditure incurred was \$4,992.96.

As now completed the pier is 245 feet long and 130 feet wide. It is 29 feet high above the bottom of the river at its outer end, which stands in about 8 feet of water at low water spring tides.

Repairs.—In 1883 and 1884 minor repairs were effected to the flooring, &c., at an aggregate cost of \$288.55.

In 1887 a slip was built at the outer end of the pier, the waiting room was painted and general repairs performed at a cost of \$1,390.34.

In 1889 the flooring of the pier was almost entirely renewed and six fenders 14 inches square, were placed along its outer face, at a cost of \$1,631.65.

In 1892 and 1893 the flooring of the pier was completely renewed on a length of 210 feet and a width of 110 feet, with red spruce planks 5 inches in thickness; the east side of the structure was raised 18 inches, the waiting room was painted both inside and outside, and two mooring posts were renewed, the expenditure incurred during the two years was \$3,024.04.

In 1894, a sum of \$1,999.60 was expended for the construction of a movable slip and the purchase of two crab winches to raise it. During the years 1895 and 1896, a portion of the outer face and the whole of the eastern face of the structure were re-sheathed with red spruce 6 inches in thickness, and a portion of the flooring not completed in 1893 was laid.

Expenditure during the two years, \$3,991.88.

During the year 1898, a sum of \$239.79 was expended on minor repairs to the flooring, sheds and waiting-room.

During the year 1899, a freight shed 60 by 30 feet was constructed on the south side of the pier for the storage of butter and cheese. Part of the top planking was renewed. The work was done by day labour at a cost of \$1,499.27.

During the year 1900, the pier was raised 3 to 5 feet over the whole surface; stone ballast was placed in the outer end which was also sheathed with tamarack and covering renewed with 3-inch plank at a cost of \$5,050.59.

During the year 1900-01, a new 3-inch tamarack floor was laid on a length of 210 feet, and a width of 45 feet.

The northern part of the wharf for a length of 145 feet was sheathed and the sheds were painted.

Expenditure, \$1,012.12.

During the year 1901-02, the old buildings on the wharf were taken down and new ones erected, the new freight shed measures 60 by 30 feet, and the passengers' waiting-room is 25 by 25 feet. These two buildings are covered with galvanized iron and painted three coats inside and outside. On the north side of the wharf six fenders 11 by 11 inches were placed, and five snubbing posts were renewed.

Expenditure, \$1,513.34.

During the year 1903-04, the sheathing on the two outer corners of the wharf was renewed with hardwood, new fenders put in at the head of the wharf, the flooring was repaired and a portion of the flooring on shore which had to be renewed was replaced with gravel, and other minor repairs were performed.

Amount expended, \$1,045.03.

Total amount expended to July 1, 1904, \$53,051.82.

Spring tides rise 17 feet, neaps 9 feet.

4-5 EDWARD VII., A. 1905

## CLARK CITY (SEVEN ISLANDS).

Clark City is the name of a new settlement established on the western shore of the bay of Seven Islands, in the county of Chicoutimi and Saguenay, on the north shore of the River St. Lawrence, about 330 miles below Quebec.

In 1902, the North Shore Power, Railway and Navigation Company, acquired large tracks of timber land and commenced the construction of extensive pulp and saw-mills on the Ste. Marguerite river which falls into the River St. Lawrence a short distance to the west of the bay of Seven Islands.

The site of the mills is about nine miles inland from the St. Lawrence, and to facilitate the shipping of their products, the company built a railway from their mills to a point, on the western side of Seven Islands Bay, near its entrance into the St. Lawrence, and called Pointe Noire, where the construction of a commodious wharf was also commenced.

The bay forms a large, deep and well sheltered natural harbour which only requires wharf accommodation. In 1904, the department decided to construct the wharf as a public work and to refund to the company for work performed thereon and for materials already delivered for its construction, and the company transferred to the department the site and right of way to the approaches of the structure.

The part constructed by the company consisted in the approach of stone and earth, 546 feet long, 30 feet wide on top, with side sloping 1 in 1, and of an average height of 20 feet; a crib built of close-faced timber, 200 feet long, 30 feet wide and 20 feet high, sunk in place and ballasted; framed timber for another crib of the same dimensions, but not built, for the whole of which the sum of \$34,433.95 is to be paid.

The materials delivered consisted in pine, spruce and cedar timbers, also a quantity of iron, for which the sum of \$21,485.34 is to be paid. The construction of the wharf is being continued by the company under the supervision of an engineer from the department and payments are made by the department on the production of certified vouchers. When completed the wharf will be 1,100 feet long, comprising an approach of earth and stone 546 feet long as described above, timber cribwork 30 feet wide on a length of 401 feet and a further length of 153 feet of cribwork 40 feet wide; the outer end will stand in a depth of 26 feet at low water spring tides which rise 15 feet.

The expenditure for the fiscal year 1903-04 was \$25,009.06.

## CLORYDORMES.

The sum of \$187.15 was expended towards the removal of loose and solid rock at Petite Anse and \$190.81 were spent at Little Clorydormes bay, county of Gaspé, to remove large boulders that were in the way of fishing-boats. Total, \$267.21.

## COTEAU DU LAC.

The village of Coteau du Lac, in the county of Soulanges, is situated on the north shore of the St. Lawrence, thirty-six miles above Montreal.

Construction.—In 1888, the construction of a landing pier was commenced and was completed in 1889 at a cost of \$6,918.71. It consists of a head block of solid cribwork, 101 feet long and 21 feet wide, with a cribwork extension, 40 feet long and 47 feet wide, built along the middle of its inner face, and a block and span approach 75 feet long and 26 wide. The outer face of the head block is 15 feet high above the bottom of the river and stands in 10 feet of water at ordinary low water. Across the inner end of the extension to the head block, is built a freight shed of the full width of the extension and 20 feet long, with a passageway for vehicles underneath.

Repairs.—During the year 1894-5, sundry repairs were effected to the structure at a cost of \$249.99. In 1896-97, most of the floor stringers and the whole flooring of the

## SESSIONAL PAPER No. 19

pier, which were decayed, were removed, new floor stringers were put in, the whole structure was refloored with 4-inch hemlock planks at a cost of \$694.58.

In 1897-8, sundry repairs were made to the corner sheathing, capping, &c., at a cost of \$200.41.

In 1903-04, the head block being decayed and dilapidated was removed to low water level and rebuilt with close-faced 12 by 12 inch timber.

The work carried out by day labour, was commenced in March, 1904, and was not completed June 30. The expenditure during the fiscal year was: \$914.36.

## CRANE ISLAND (SOUTH SHORE).

Ile aux Grues, or Crane island, is in the River St. Lawrence, opposite Cape St. Ignace, in the county of Montmagny; it is about 40 miles below Quebec. Spring tides rise 20 feet; neap tides, 12 feet.

The inhabitants are chiefly engaged in farming.

During the past fiscal year, the renewal of the superstructure of the wharf, begun in 1902, was continued; for a length of 270 feet, on a height of  $6\frac{1}{2}$  feet, all the face timbers, cross-ties and longitudinalinals together with the top planking have been renewed, and 160 cubic yards of stone ballast were added.

These repairs were done by day labour during the months of August, September and October, 1903, at a cost of \$3,496.07.

## DESCHAMBAULT.

Deschambault, county of Portneuf, is a flourishing village on the north shore of the St. Lawrence and the Canadian Pacific Railway, forty-one miles above Quebec. A steamer plies semi-weekly to and from Quebec.

Owing to the decision of the department to build the proposed wharf by contract work, the expenditure was made to pay only for materials purchased prior to such decision, their delivery at Deschambault and services connected therewith.

There was also an expenditure of \$195, incurred to repair the trestle roadway and put it in place at the opening of navigation between the isolated block and the shore.

Total expenditure for the fiscal year, \$2,972.

## ECHOIRIE.

The sum of \$98.65 was expended towards the removal of rocks at Echourie, county of Gaspé.

## FATHER POINT.

Father Point, in the county of Rimouski, is on the south shore of the St. Lawrence, six miles below the town of Rimouski. Most of the ocean liners call there to land or take their pilots. The point is one of the few places on the south shore of the St. Lawrence, where deep water can be found at a relatively short distance from land.

A self-registering tidal gauge was established here some years ago by the Department of Marine and Fisheries. There are also a powerful compressed air fog-horn and an acetylene gas lighthouse.

It was found desirable a few years ago, that a deep water wharf be constructed at Father Point; tenders were called for and on November 8, 1901, a contract was awarded to Messrs. Heney & Smith for a section of the structure 600 feet long.

The work was carried out during the years 1902-03, and completed by the beginning of July, 1904, the amount of the contract being \$57,821. The section is a very substantially built cribwork, thoroughly filled with stone; it is 600 feet long and 40 feet wide at the bottom; the sides are vertical up to the level of 5 feet below low water line, from this point, the east side is built with a batter of 1 in 4 and the west side is



4-5 EDWARD VII., A. 1905

vertical, the width at top being 32 feet. Both faces are sheathed with hardwood 10 inches thick. The outer end stands in 18 feet of water at low water spring tides.

On May 17, 1904, a new contract was entered into with the same parties for the construction of an additional length of 200 feet. At the close of the fiscal year, one of the cribs was ready to be set in place. The kind of construction is the same as before.

The expenditure for the year 1903-04 was \$39,162.26.

\*  
GEORGEVILLE.

Georgeville, a village in Stanstead county, on the east side of Lake Memphremagog, 9 miles from Smith's Mills, to the southward of the town of Magog, on the Canadian Pacific Railway, and 13 miles from Stanstead, on the Boston and Maine Railway. It is noted for its lake sceneries, and as the site of many beautiful summer residences. It contains two churches, Episcopal and Methodist, telegraph office, two hotels, two stores. It is a port of entry of importance and all steamers plying between Magog and Newport (State of Vermont, U.S.A.) call at the wharf.

During the month of October, 1903, the sum of \$78.57 was expended to effectuate repairs to the flooring and minor repairs to the wharf at that place.

GRANDE ENTRÉE.

Grande Entrée is situated on the western end of Coffin island. The sum of \$26 was expended towards the erection of a crane on the north-west corner of government pier.

GRANDE RIVIÈRE.

Grande Rivière, county of Gaspé, is on the Baie des Chaleurs, 21 miles south-west of Percé.

The sum of \$965.79 was expended during the last fiscal year for repairs to this wharf. Four hundred feet in length of the pier has been floored over with spruce deals; the head of the pier was raised 18 inches on a length of 75 feet, some minor repairs done to the shed and six hardwood fenders were placed on the outer end.

GRANDES BERGERONNES RIVER.

Grandes Bergeronnes, in Saguenay county, is on the north shore of the St. Lawrence, eighteen miles below Tadoussac.

The entrance of the River Grandes Bergeronnes being obstructed by boulders, and a channel of about 150 feet was cleared from the entrance to the village for a distance of one mile.

In the years 1887, 1895, 1899, 1901 and 1902 a total sum of \$1,254.32 was expended.

During the fiscal year 1902-03, the work was continued in the channel. The work was done by blasting, by day labour. The amount expended was \$398.77.

During the fiscal year 1903-04, the work was continued in completing the removal of boulders in the river.

Spring tides rise 16 feet, neap 9 feet 1½ in.

Amount expended, \$224.38.

Total amount of expenditure to July 1, 1904, \$2,177.12.

GREEN RIVER.

Green river, which flows through the parish of Isle Verte, empties into the St. Lawrence, about three-quarters of a mile west of Isle Verte church. During spring freshets, this river is liable to cause considerable damage by flooding the mills, scouring and disintegrating the land of the riparian properties.



## SESSIONAL PAPER No. 19

In order to prevent further damage, or at least, to reduce it to the lowest possible amount, it was decided to improve the channel of the river, to facilitate the waterflow in the spring. To that effect, the following works were performed :—

A new channel, 800 feet long, 20 feet wide, was opened on the west side of the river; about 1,200 cubic yards of earth and 200 cubic yards of blasted rock being removed.

A dike, 200 feet in length, 8 feet high, on widths of 16 and 8 feet at base and top respectively, was built of open-faced cribwork, filled with stone, with a water tight sheathing in front. These works were done by day labour, during the months of November, 1903, and May and June, 1904; the amount expended was \$3,698.76.

## GRIFFIN COVE.

Griffin Cove, county of Gaspé, is seventeen miles north-west of Gaspé cape. The mouth of the river having been closed up by a gravel bar thrown in by north easterly gales, overflowed the flats and part of the village, causing a good deal of damage to property and to the fishing industry. A channel was cut through the bar and a training pier, 170 feet long, 22 feet wide and average height of 11 feet, was built to guide the current in the channel and keep it opened.

The sum of \$1,999.06 was expended on this work during the last fiscal year.

## GRINDSTONE.

Grindstone is a village on the south side of Grindstone island four miles east of Etang du Nord and composed mostly of Scotch farmers and Acadian fishermen.

For years past most of the freight for the Magdalen islands has been unloaded here and the building of a landing pier was greatly needed. In the fiscal year 1901-02 an approach of 605 feet, 25 to 50 feet wide, and of an average height of 9½ feet on the outside face was built along the eastern side of Grindstone cape.

The other face of the approach, exposed to the heavy easterly gales from the Atlantic ocean, is protected by a sheathing of split spruce logs, held in place by two sets of walings fastened by cross-ties and a double set of posts. A mattress of brush was laid under the stone filling.

During the past working season the pier was extended 200 feet with an average width of 28 feet and an average height of 22 feet; six feet of the superstructure of the last 100-foot crib remains to be done. The depth of water at head of work is now 14 feet at low water spring tides.

The amount paid out during the past fiscal year on this work was \$9,408.76.

Spring tides rise 4 feet; neaps, 2 feet.

## GRONDINES.

Grondines, county of Portneuf, is situated on the north shore of the St. Lawrence, 48 miles above Quebec.

Owing to the decision of the department to build the proposed new wharf by contract work instead of by day labour, the expenditure incurred was for materials purchased prior to this decision, their delivery at Grondines and services in connection therewith, also for tools and plant.

Expenditure during the fiscal year, \$4,395.60.

## GROSSE ROCHE.

Grosse Roche, called Sacré-Cœur, in the county of Saguenay, is situated on the north side of the River Saguenay.

4-5 EDWARD VII., A. 1905

Sacré-Cœur is an important settlement of the Saguenay; it contains one church, post office, telegraph office, several stores and two cheese factories.

During the session of 1903, the sum of \$1,000 was voted towards the construction of a wharf.

Timber was purchased to the amount of \$951.39.

#### HOUSE HARBOUR.

House Harbour is an important parish on the western end of All-right island.

The pier built at the channel during the fiscal year 1900-01 forms an oblong of 50 feet by 100 feet with 10 feet of water at the head. A sum of \$112.28 was spent to buy material for repairs to the flooring and to raise the head of the pier that had settled some 18 inches.

#### HULL.

Hull, the shire-town of the county of Wright, is situated on the Ottawa river, opposite the city of Ottawa. It possesses unrivalled water power privileges and contains a number of saw-mills, a pulp and paper manufacture, a match factory, &c., &c.

Two large iron bridges span the river at this point, connecting it with the city of Ottawa. Population, 14,000.

The work of building a concrete and masonry wharf on the Ottawa river at the foot of Ste. Elizabeth street, was awarded by contract on October 30, 1900.

The wharf consists: 1st, of a landing block 130 feet wide and 70 feet deep, built up to three different levels in ten feet of water, and constructed of a cribwork substructure up to the water level, and a superstructure of concrete masonry walls with filling between them; 2nd, an approach from shore to the landing block 403 feet long built up also to three different levels, consisting of dry rubble masonry walls with filling between them. During the fiscal year 1900-01 the cribwork substructure of the landing block and a portion of the dry walls were built and some filling made, at a total cost of \$9,865.12.

During the fiscal year 1901-02, the work under contract was completed, and other works not provided for by contract were performed. These included: the cementing of the joints of the coping stones of the dry masonry walls for 1,200 lin. feet at a cost of \$788.45; the erection of a gas pipe railing on both sides of the approach for a length of 718 feet at a cost of \$718; and the construction of a roadway on Ste. Elizabeth street, 600 feet long, 30 feet wide and protected on both sides by riprap walls having a batter of 1 in 1, at a cost of \$5,615.62.

During the fiscal year 1902-03, some minor works were performed to complete the work thoroughly, and a substantial freight shed 50 x 40 feet dimensions, and two stories high was built at a cost of \$5,207.05.

During the fiscal year 1903-04, repairs and maintenance amounted to \$68.79.

Total expenditure on this work up to June 30, 1904, is \$54,118.55.

#### IBERVILLE.

Iberville, an incorporated town in the county of the same name, on the Richelieu river and on the Central Vermont Railway, Canadian Pacific Railway and United Counties Railway, opposite the town of St. John's. It contains two churches, Roman Catholic and Episcopal, a number of stores, 1 iron foundry, several hotels, 3 potteries, 1 grist mill and 2 agricultural implement factories. Population, 1,512.

During the fiscal year 1903-04, the following repairs were made to the wharf at that place, built in 1899. Half the floor of the head block was renewed, that of the approach was redoubled and the storehouse and guard railing were painted two coats.

The expenditure was \$412.84.

## ILE AUX COUDRES.

This island, with a population of 1,500, is in the county of Charlevoix, sixty-two miles below Quebec.

During the fiscal year 1903-04 the extension built in 1902-03 was sheathed with hardwood planks.

The amount expended during the fiscal year 1903-04 was \$2,042.94.

## ILE PERROT.

Ile Perrot is an island in Vaudreuil county, at the confluence of the Rivers Ottawa and St. Lawrence, and between the Lake of Two Mountains and Lake St. Louis. This island is about seven miles long and divides the Ottawa into two branches.

During June, 1904, minor repairs were effected to the flooring and guard railing to the wharf on the south shore of the island at a cost of \$437.80.

## ISLAND HOUSE, OR GRAND DISCHARGE.

Island House, Chicoutimi county, is situated at the head of the Grand Discharge of Lake St. John, seventeen miles from Roberval, it is a sporting resort with good hotel accommodation, a steamer, the 'Mistassini,' makes a daily trip from Roberval to Island House.

In 1894-95 the floating pontoon, built by the hotel proprietor, for landing passengers, was transferred to the Department of Public Works and a sum of \$500 was expended in building an extension thereto 40 by 25 feet. The pontoon is now 100 x 25 feet, built of four rows of round logs of cedar set close lengthwise and crosswise, with floor stringers every 4 feet and covered with 2-inch planking.

The outer face is provided with nine guard fenders reaching a height of 6 feet above the flooring.

During the fiscal year 1903-04, the floor stringers were renewed and a new flooring was put on; the fenders and the mooring posts were also renewed.

Amount expended, \$182.17.

Total amount of expenditure, \$686.17.

## ISLE VERTE.

The village of Isle Verte, in the county of Temiscouata, is situated on the south shore of the St. Lawrence, sixteen miles below River du Loup and 131 miles east of Quebec. It contains flour, carding and saw-mills.

Spring tides rise 19 feet; neap tides, 12 feet.

During the past fiscal year 1903-04, the sum of \$800 was expended to improve the harbour; 360 cubic yards of large boulders were removed from the mouth of the River Verte, in the vicinity of the head of the wharf.

Urgent repairs required to the planking of the wharf, have also been done.

## KAMOURASKA.

The village of Kamouraska, in the county of same name, is situated on the south side of the St. Lawrence, ninety miles below Quebec; it is a well known place, most frequented as a summer resort. Spring tides rise 19.5 feet; neap, 12 feet.

During the fiscal year 1903-04, in order to provide shelter for schooners and other vessels and upon the special request of the navigators and business men of the place, it was decided to repair the old block standing on the west side of the new wharf and to connect it with the shore, by a light cribwork, 175 feet in length on a width of 20 feet.

The work was begun on May 20, 1904, and at the close of the fiscal year the old crib was repaired and about one half of the shore section was constructed.

The work was done by day labour and the sum expended was \$3,915.81.

4-5 EDWARD VII., A. 1905

## KNOWLTON LANDING.

Knowlton Landing is a post office in Brome county, on Lake Memphremagog, near Knowlton on the Canadian Pacific Railway.

During the months of March, April and June, 1904, some repairs were made to the public wharf at that place. They consisted in renewing several caps, pieces and stringers, repairs to the flooring and replacing two mooring posts with cast iron nigger heads.

The expenditure during the fiscal year was \$176.52.

## LAC A BEAULIEU.

Lac à Beaulieu, in the municipality of Les Bergeronnes, is situated three miles north of Les Bergeronnes village.

The outlet of Lac à Beaulieu is obstructed with boulders and rock, which render the floating of logs very difficult.

The sum of \$297.76 was expended in removing boulders and blasting points of rock.

## LAKE MEGANTIC.

Lake Megantic, is a post village in Compton county, on Lake Megantic, and on the Canadian Pacific Railway, 60 miles from Sherbrooke. It contains two churches, one Presbyterian and one Roman Catholic, one large saw-mill, one furniture factory, several stores, three hotels, telegraph office. Population, 1,883.

During the month of November, 1903, the sum of \$51.13 was expended to effectuate minor repairs to the wharf at that place.

## LAPRAIRIE.

Laprairie, the chief town of the county of the same name, is situated on the south shore of the River St. Lawrence, seven miles above Montreal.

During the months of July and August, the sum of \$878.74 was expended by day labour to effectuate repairs to the protection walls at that place. Two sections of that protection wall, of a total length of 823 feet, being too much decayed and dilapidated to be repaired, it was decided to replace them by a concrete wall, 7 feet 8 inches wide at the base, and a width of 3 feet at the top, by an average height of 18 feet. To that effect, a contract was entered into with Messrs. Amiot & Lemay, of Montreal, for the sum of \$29,650. The work was commenced in November, 1903, suspended during the winter and continued in May, 1904. At the end of the fiscal year, the work was over half done.

Against the appropriation of \$15,000, the sum of \$14,951.04 was expended, including the amount of \$878.74 for repairs, as above stated.

## LES CUISSÉS D'ALMA.

Les Cuissés d'Alma, Chicoutimi county, in the little discharge of Lake St. John, three miles from the lake, is in the parish of St. Joseph d'Alma, and seven miles from the village of that name.

At this place there are three rocks called the Cuissés d'Alma, and an island which obstructs the channel of the Petite Décharge.

In 1901-02, the blasting of these rocks was commenced on the east side. Amount expended, \$575.92.

In the year 1902-03, the east side was completed and a portion of west side was done.

Amount expended, \$1,229.37.

## SESSIONAL PAPER No. 19

During the fiscal year 1903-04, the removal of the two points of rock was completed, and work was commenced on the island a short distance below.

Amount expended, \$1,501.97.

Total of expenditure to July 1, 1904, \$3,282.88.

## LES ESCOUMAINS.

Les Escoumains, in the county of Saguenay, is situated on the north shore of the River St. Lawrence, twenty-one miles below Tadousac.

The Saguenay Lumber Company have an extensive saw and pulp mill at this place. There is one Roman Catholic church, telegraph and post office and several stores.

The harbour of Les Escoumains was obstructed by boulders. During the year 1902-03 the sum of \$592.29 was expended in blasting part of the obstructions.

During the fiscal year 1903-04, the blasting of boulders at the entrance of and in the harbour of Les Escoumains was continued.

Amount expended, \$198.25.

Total amount of expenditure, \$499.38.

Spring tides rise 15 feet ; neaps, 9 feet.

## LE TABLEAU (DESCENTE DES FEMMES).

Le Tableau—Descente des Femmes—is a new settlement on the north side of the River Saguenay, about sixty-one miles from its mouth. In view of giving facilities to the colonization of that portion of the Saguenay who have no other communication than by water, it was decided to build a wharf at this place.

During the year 1902-03 a block of cribwork 40 feet in length by 30 feet in width and a return of 30 feet by 25 feet, and also two piers 25 by 25 feet and 25 feet apart were commenced.

The block was sunk in 18 feet of water. The block and the return forming an L, are built of close-faced timber 11 by 11 inches and sheated on the outer corners with hardwood timber.

A landing slip was built in the outer block and one in the return on the west side. The piers are built of round logs open faced.

Amount expended was \$5,035.71.

During the fiscal year of 1903-04 the work was continued and an approach was built. The corbels and part of the stringers have been laid.

The outer end of the structure is 38 feet high, the work was done by day labour.

The amount expended during the fiscal year 1903-04 was \$3,018.33.

Total amount of expenditure to July 1, 1904, \$8,055.71.

Spring tides rise 18 feet ; neaps, 11 feet.

## L'ISLET.

The Village of L'Islet, in the county of the same name, is situated on the south shore of the St. Lawrence, fifty miles east of Quebec. Spring tides rise 21 feet ; neap, 13 feet.

The wharf at this place has a length of 1,105 feet and a width of 31 feet, with a head block 116 feet wide. This wharf was substantially built with close-faced cribwork, it will nevertheless require heavy repairs in the near future; the superstructure is now in an advanced state of decay.

During the fiscal year ended June 30, 1904, the slip on the west side of the wharf, which had been partly repaired the previous year, was thoroughly restored; 450 spruce deals were used to make general repairs to the sidewalks and top planking. Some of the upper-face timbers were temporarily repaired.

The work was done by day labour at a cost of \$496.17.

4-5 EDWARD VII., A. 1905

## LOTBINIÈRE.

Lotbinière, in the county of the same name, is situated on the south shore of the St. Lawrence, about forty miles above Quebec.

At the beginning of 1904, a contract was awarded for the construction of an extension from the shore to the isolated block, a distance of 420 feet and 20 feet wide on top.

At the end of the fiscal year the work had been commenced but not completed. The amount expended was \$6,971.97.

## MAGOG.

Magog, a thriving incorporated town, is on the Magog river, at the outlet of Lake Memphremagog, in Stanstead county, and a station on the Canadian Pacific Railway, 3 hours run from Montreal. It is a sub-port of entry and contains 4 churches English, Methodist, Roman Catholic and Union, 30 stores, 4 hotels, saw and grist-mills, Dominion Cotton Company's mills with 800 operatives, 3 bakeries, 1 carriage factory, 1 newspaper, 2 telegraph and 2 express offices and good schools. Population, 3,516.

In order to accommodate the local trade a landing pier was purchased in August, 1875, for the sum of \$2,500.

It is situated opposite the railway station, and is a pile structure 430 feet long, 24 feet wide for the first 305 feet from the shore, and 40 feet wide for the remaining 125 feet. Its head is 12½ feet high above the bottom of the lake and stands in 7½ feet at low water.

Repairs.—In 1896-7, the most urgent repairs to the flooring were effected at a cost of \$154.82. During the year 1899, a number of broken planks in the flooring were removed, a new storehouse and guard railing were built at a total cost of \$530.07.

In 1901-02, minor repairs were made at a cost of \$11.34.

This landing pier having become dangerous owing to decay, and as the roadway leading to it was in a bad state, incommodious and is the property of the Canadian Pacific Railway, it was decided to build a new landing pier at the foot of Lake street; to that effect, permission was obtained by a resolution of the town council, on March 11, 1904, and the work was commenced. It consists of a stone embankment 200 feet in length by 26 feet in width on top, from the foot of Lake street, and a head 16 feet in length by 40 feet in width, was built with piles, caps, stringers and flooring.

The work was not completed on June 30, 1904, it is being done by day labour.

The expendiutre during the fiscal year 1903-04 was \$1,806.58.

## MAGOUASHA.

Maguasha landing pier, is on the north shore of the Baie des Chaleurs, Bonaventure county, opposite the town of Dalhousie, N.B.

A contract was let for \$7,500, for the construction of a wharf at this place. It is to be 330 feet long and 20 feet wide. The amount expended during the year 1903-04 was \$3,998.70. The work was not completed at the end of the fiscal year.

## MARIA.

Maria wharf, on the north shore of the Baie des Chaleurs, Bonaventure county.

In May, 1902, a contract was awarded for the construction of a wharf at this place.

In the year 1902-03 the sum of \$11,991.13 was expended on the wharf.

During the fiscal year 1903-04 the work was completed and the amount of \$20,640.65 was expended.

## SESSIONAL PAPER No. 19

## MATANE.

The village of Matane, in the county of Temiscouata, is situated on the south shore of the St. Lawrence, at the mouth of the River Matane, 240 miles below Quebec, and 30 miles from Little Metis, the nearest point on the Intercolonial Railway. It contains extensive saw-mills and a spoolwood factory. Spring tides rise 15 feet; neaps, 8 feet.

The breakwater standing on the west side of the mouth of the river, being badly damaged by ice during the month of November, 1903, some urgent repairs were done to it. Owing to high water, it was only at the beginning of the month of June, that the work could be resumed.

At the close of the fiscal year, all the materials, timber and iron, required to complete the repairs, were bought and paid for, and the work was progressing; it consists in repairing the cribs and renewing the whole of the sheet piles covering the seaward face of the breakwater.

The repairs are performed by day labour and the amount expended was \$2,973.34.

## MISTOOK.

Mistook, in the township of Taillon, situated on the Grand Discharge of Lake St. John, in the county of Chicoutimi, is also called Saint Cœur de Marie, and contains one Roman Catholic church, post office, several stores, two cheese factories, and two saw-mills.

During the fiscal year 1903-04, a pier 40 feet in length at bottom and 30 feet at top by 20 feet wide, and 23 feet in height, was sunk at 150 feet from high water mark; the pier is built with a landing slip in front (ice breaker) sheathed with 8-inch hardwood planks and also a slip on the outer face. The pier is built of open-faced round-logs and fendered every 8 feet with 8 by 10-inch timber; the work was done by day labour.

Amount expended was \$2,061.04.

## MONT-LOUIS.

Mont-Louis, a village of considerable importance, in the county of Gaspé, and the first municipality below Ste. Anne des Monts, is one hundred and thirty-five miles below the nearest Intercolonial Railway station, Metis. The harbour of Mont-Louis, the largest and best situated on the St. Lawrence Gaspé coast, offers good water and good protection against all winds, except from northerly winds.

The landing pier being built from the west shore towards the eastern point of the bay, will, when completed, shelter it against northerly winds.

A crib 110 by 25 feet, and 10 feet high, was built and placed in position in July. The total expenditure during the last fiscal year was \$4,999.69.

Spring tides rise 9½ feet, neaps, 5 feet.

## MONTMAGNY.

Montmagny, in the county of the same name, is on the south shore of the St. Lawrence thirty-seven miles below Quebec. It is a thriving little town of over 2,000 inhabitants, important shippings of lumber are made by the Price Bros. Co., to European markets.

Besides a pulp mill, there are also two foundries and iron works.

The town is built on both sides of Rivière du Sud which has a perpendicular fall of 20 feet and empties into the St. Lawrence; below the fall, the river expands and forms what is called the 'basin,' affording shelter from the winds, for vessels of moderate draught.



4-5 EDWARD VII., A. 1905

During the last fiscal year, the shed built on the shore end of the wharf, was repaired and painted, at a cost of \$123.93.

Spring tides rise 21 feet; neap tides, 12 feet.

## MONTREAL HARBOUR (LOWER DIVISION).

During the season of 1903, the remaining six sections of cribwork were launched, built and sunk, completing the substructure of the main pier and eastern bulkhead.

The laying of footing blocks was continued from July to November, 1903, covering sections 7 to 14 inclusive or a distance of 1,250 feet.

The work of the concrete walls was resumed on September 16, and carried on till November 19, the space built being sections 6 to 12 inclusive, or a distance of eleven hundred feet (the height of wall 18 feet above datum line, quantity of concrete laid 5,986 cubic yards).

The excavation was performed by the dredge 'King Edward VII' and the materials deposited as refilling behind the walls and behind the cribs.

After the excavation to prepare the site of cribs was completed, viz., from November 6, 1903, the dredging necessary to procure material for filling behind walls was not included in the original contract, and to June 30, 1904, the quantity returned as an extra has amounted to 149,150 cubic yards.

The quantities returned from June 30, 1903, to November 6, 1903, amounted to 113,000 cubic yards.

The following is a summary of the principal items of work performed during the fiscal year :

Oak sheathing of cribs.. . . .	25,555 cubic feet.
Spruce and hemlock.. . . .	220,800 "
Stone ballast.. . . .	34,920 cubic yards
Iron in bolts, &c.. . . .	261,200 pounds
Dredging.. . . .	262,150 cubic yards
Concrete footing blocks.. . . .	3,614 "
Concrete walls.. . . .	5,986 "

The amount expended during the fiscal year 1903-04, was \$209,104.96.

## NEW CARLISLE.

New Carlisle, on the north shore of the Baie des Chaleurs, is the chief town of the county of Bonaventure.

During the year 1903-04, the sum of \$1,300.93 was expended in procuring the timber required for the sheathing of the wharf at this place.

## NOMININGUE.

Nominingue, a post village in Labelle county, is on Lake Nominingue and the terminus of the Canadian Pacific Railway, Laurentian Mountains Branch. It contains 1 Roman Catholic church, 1 convent, 5 hotels, saw and grist mills, several stores and telegraph office.

During the fiscal year 1903-04, the construction of five small wharfs was commenced. They consist of a head block, 31 by 20 feet, of open faced round logs, fully ballasted and floored with 3-inch plank, and a stone approach. They are situated thus : one on Lake Bourget, one on Lake Petit Nominingue, and three on Lake Grand Nominingue.

The work, carried out by day labour, was not completed on June 30, 1904, but was well under way.

The expenditure during the fiscal year was \$2,017.22.



## SESSIONAL PAPER No. 19

## NOTRE DAME.

The village of Notre Dame is situated on the west side of Lake Temiscouata, on the Temiscouata Railway, about midway between River du Loup and Edmunston, in the county of Temiscouata. It is the centre of an extensive lumber trade; two steamboats and numerous other vessels are plying over the lake during the season of navigation, which does not usually close before the beginning of January.

Lake Temiscouata, is 30 miles long, on a width varying from 1 to 2 miles, while its tributaries, rivers and lakes, are far famed among hunting and fishing sportsmen.

In order to provide landing accommodation on both sides of the lake, two small piers of open faced cribwork were commenced at Notre Dame during the month of November, 1900; one on the west side, opposite the church, and the other on the east side. The expenditure during that year was of \$1,068.37.

In 1901 these piers were raised 5 feet at the outer ends and brought level to the shore ground; they were filled with stone ballast and planked over with spruce deals. Stairways were provided for landing at low water stage. The two piers were sheathed on all sides. The amount expended in that year was \$1,185.72.

During the fiscal year 1902-03, the sum of \$1,124.72, was expended in building a close faced extension 30 x 25 feet and 17 feet high to the pier on the west side of the lake.

In the course of the fiscal year 1903-04, the pier standing on the east side was also extended; an addition 30 x 25 feet and 18 feet high, of close faced cribwork was built at a cost of \$1,199.50.

The whole works were performed by day labour and the total expenditure, since the beginning, has been \$4,578.31.

## PASPEBIAC.

Paspebiac is in the county of Bonaventure, on the Baie des Chaleurs, 68 miles from Percé.

During the year 1903-04, a contract was let to build a wharf at this place for the sum of \$19,695. It is 450 feet long by 30 feet wide.

During the year 1903-04 the work done on the contract amounted to \$5,705.82, but the work was not completed.

## PERCÉ.

Percé, the shire town of the county of Gaspé, is situated on the Gulf of St. Lawrence, thirty-six miles from Gaspé basin. The harbour consists of two small coves called the north and south coves.

In 1900, a contract was awarded for the construction of a wharf in the north cove, it is 670 feet long, 20 feet wide for a length of 260 feet, thence tapering to a width of 29 feet at the outer end which stands in 13 feet at low water spring tides. At the end of 1902-03, the structure was completed.

During the fiscal year 1903-04, rock and boulders were removed from the harbour at Red Head and White Head at a total cost of \$636.93.

Seventy feet on the east side of the south beach or old wharf at Percé was repaired by sheet piling.

A shed and waiting room on the shore end of new wharf, north beach, 30 by 40 feet was partly built; 66 per cent of the work was done.

A slip 10 by 10 feet was built at the outer end of north pier and a roadway built from the main road, at a cost of \$1,387.26.

The total expenditure for the year 1903-04 was \$1,786.89.

4-5 EDWARD VII., A. 1905

## PETIT BONAVENTURE.

Petit Bonaventure, county of Bonaventure, is situated on the Baie des Chaleurs.

During the fiscal year 1903-04, the sum of \$200 was expended in lowering the approach to the wharf.

## PETITE RIVIÈRE AU RENARD.

The sum of \$50 was expended towards the removal of rocks at Petite Rivière au Renard, county of Gaspé.

## PETITE RIVIÈRE EST.

Petite Rivière Est, is in the county of Gaspé. During the last fiscal year, the sum of \$175 was expended towards the removal of rocks from the harbour.

## PETITES BERGERONNES.

Petites Bergeronnes, county of Saguenay, is situated on the north shore of the St. Lawrence, fifteen miles below Tadousac. There is an important saw-mill in the River Petites Bergeronnes.

The entrance to, and the river itself, being obstructed by boulders, a channel was cleared up to the saw-mill.

Spring tides rise 16 feet, neap 9 feet.

Amount of expenditure during the fiscal year 1903-04, \$611.36.

## PETITES TOURELLES.

One hundred dollars were spent towards the removal of rocks and the opening of a channel, 30 feet wide, through a shoal of large boulders at the entrance of a small bay used by fishing boats, at Petites Tourelles, county of Gaspé.

## PETITE VALLÉE.

Fifty dollars were expended towards the removal of rocks at the mouth of the Little Vallée river, county of Gaspé.

## PIERREVILLE.

Pierreville, a thriving post village in Yamaska county, on the River St. Francis, near its entrance into the St. Lawrence, 28½ miles north-east of Sorel, the actual terminus of the South Shore Railway.

It contains 1 Roman Catholic church, 1 telegraph office, about a dozen stores, saw, grist and carding mills, and has a very extensive lumber trade. Buckskin gloves, mitts and shoes and baskets are made here in large quantities by a tribe of Abenakis Indians. Ship building is also engaged in. Population of the village: 1,108.

By the fact that the private wharf at Pierreville is situated above the bridge of the South Shore railway, and that since the construction of that bridge, the barges and vessels cannot pass under the bridge, it was decided to build a public wharf immediately below the bridge; to that effect a right of way, from the public road to the river was purchased, part from Mr. Jos. Rasconi, of Pierreville, and part from the Abenakis Indian reserve, for the sum of \$700.

On June 30, 1904, the work was not commenced, but materials had been procured for the sum of \$3,816.91.

The work will be carried out by day labour during next fiscal year.

## SESSIONAL PAPER No. 19

## POINTE À ELIE.

Pointe à Elie is the extreme south-easterly point of Allright island, two miles east of House Harbour Catholic church.

The steamer 'Amelia' calls at Pointe à Elie for mails and freight and for shelter during north-easterly gales.

The construction of a landing pier and breakwater will give here the best of shelter from all storms and specially from easterly gales that prevail in the spring.

During the fiscal year 1903-04 a length of 195 by 24 feet wide of the pier proper was built.

The amount paid out on this work during the last fiscal year is \$10,431.45.

## POINTE AUX ESQUIMAUX.

Pointe aux Esquimaux, in the united counties of Chicoutimi and Saguenay, is situated on the northern shore of the River St. Lawrence, 525 miles below Quebec.

Pointe aux Esquimaux is the chef lieu of the north shore and contains one Roman Catholic church, one convent, a hospital, 3 stores; it is the most important trading post of the north shore for the traffic of fur, fish and oil.

The wharf purchased by the government in 1895 had a length of 125 feet and a width of 30 feet. In 1895-96, it was lengthened 60 feet by the construction of a block 30 by 30 feet and 32 feet in height, connected with the old work by a platform 30 feet in length, the wharf is now 185 feet in length, 30 feet in width and has a depth of water, at its outer end, of 24 feet at low water.

Amount expended \$4,028.43.

During the fiscal year 1902-03 a block of 30 by 30 feet and 50 feet high was built in 41 feet of water, 15 feet from the outer end of the wharf and connected thereto by stringers 10 by 12 inches and 3-inch tamarack deals.

Amount expended \$1,633.78.

During the fiscal year 1903-04 a crib 30 by 30 feet was built and sunk alongside of the work built in 1903; as the new work is expected to settle to a certain extent, its top was only finished in a temporary manner. Spring tides rise 5 feet, neaps 3 feet.

Amount expended, \$5,099.93.

Total amount of expenditure \$10,606.02.

## POINTE AUX TREMBLES.

Pointe aux Trembles, county of Portneuf, is a village on the north shore of the St. Lawrence, nineteen miles above Quebec, the nearest railway station is Pont Rouge, on the Canadian Pacific Railway, distant three miles.

Population about 1,250. Spring tides rise 17 feet, neaps 10.

During the fiscal year 1903-04, a road was opened from the public road to the wharf; fences and drains were built on each side of the road. The amount expended was \$1,343.88.

## POINTE FORTUNE.

Pointe Fortune, a post village in Vaudreuil county, is situated on the south shore of the River Ottawa, seven miles from Grenville, and forty-five miles north-west of Montreal.

It contains two churches, two stores, two hotels, &c. It is the terminus of a branch line of the Canadian Pacific Railway to Rigaud.

In order to better accommodate the traffic by water, the Crown purchased in 1902 from Mr. W. Brown, a wharf 224 feet long, parallel with the shore, together with two rights of way, one at each end of the wharf, connecting with the public road. These roads are respectively 130 and 120 feet long by 18 feet and 20 feet wide, and a strip of

## 4-5 EDWARD VII., A. 1905

land between the roadways, 158 feet long by 50 feet wide, 80 feet from the public road and adjacent to the wharf, was also purchased, to be used as a cattle yard, the whole for the sum of \$1,000.

The top of the structure, which was in a bad state of decay has been removed down to 1 foot below low water on a width of 10 feet, and the wharf rebuilt on sound foundations, with close-faced cribwork, well ballasted with stone. The new work is 19 feet high for the upstream 100 feet of its length, thence sloping upward to a height of 13 feet in the next 40 feet, and level for the remaining 84 feet. The wings at both ends are 25 feet long, joining the high ground of the shore. The outer face is built to a batter of 1 in 12, and the upper and lower corners are protected with steel boiler plates  $\frac{3}{8}$ -inch thick. The top of the wharf, for a width of 12 feet from the outer face, is covered with three inch planks.

Completed during the fiscal year 1903-04, the sum of \$1,078.93 was expended to complete the wharf, to erect a storehouse and waiting-room and to fence in the cattle yard.

The total expenditure on that work is:—

Purchase price....	\$1,036 80
Construction....	5,078 34
Total....	\$6,115 14

## PORT DANIEL.

The village of Port Daniel is on the north shore of Baie des Chaleurs, in the county of Bonaventure.

During the year 1903-04, a sum of \$2,500 was expended on the repairs of the wharf at this place.

The work consisted in putting two hundred feet of pile sheathing and refilling the wharf with stone ballast. A further sum of \$400 was expended in lowering a hill on the road leading to the wharf.

The total amount expended during the last fiscal year was \$5,441.79.

## QUEBEC HARBOUR.

In order to afford more accommodation for large ocean steamers to land immigrants and general freight in the harbour of Quebec, the department decided in 1902, to build an extension, in northerly direction, to the present breakwater, built many years ago on the river front of the harbour.

On May 8, 1903, a contract was awarded to Messrs. Dussault & Lemieux, of Lévis, for the construction of 462 feet of the extension, and on June 11, 1904, another contract was signed by the same contractors for an additional length of 500 feet of the same class of work as called for by the first contract, the prices in each case being \$198,700 and \$239,942.87.

The work was commenced in May, 1903, and at the end of June of that year, the sum of \$18,831.65 had been paid to the contractors.

The work is being built of timber cribwork, filled with stone ballast, up to 3 feet above low water spring tides, the cribs are founded on a level bed of rubble stone 4 feet in thickness resting on the sand bottom previously dredged to 46 feet at low water; on top of the cribs, the superstructures will be built of concrete on its total height of 21 feet and will stand 6 feet above high water spring tides.

The back of the cribs and concrete superstructure will be filled to coping level with dredged material, forming an embankment which will increase the available top area by about 220,000 superficial feet.

The depth of water at the outer face of the new work will be 42 feet at low water spring tides which rise 18 feet.

## SESSIONAL PAPER No. 19

During the fiscal year 1902-03, three timber cribs, forming a total length of 462 feet, were completed ready to sink. the foundation for these cribs had been dredged, the bed of rubble stone had been partly deposited and earth filling, amounting to 45,000 cubic yards, had been done, a quantity of building materials had been delivered.

Work on the second contract was not commenced until the beginning of July.

The amount expended on this work during the fiscal year 1903-04, was \$68,347.83, making a total of \$87,237.98 since the beginning of the work.

## CEDARS (REFUGE PIER.)

This refuge pier is an isolated block situated on the River St. Lawrence, about two miles east of Cedars, Que. It has a length of 80 feet by width of 20 feet. The object of the pier is to offer a mooring place for the rafts and steamboats going down the rapids at times of fog and wind.

During the months of October and November, 1903, and February, 1904, the pier, which was much dilapidated, was rebuilt from the low water level to a height of 4 feet, fully ballasted and provided with two strong cast-iron mooring posts firmly adjusted.

The work was carried out by day labour at a cost of \$522.21.

## RICHMOND.

Richmond, an incorporated town in Richmond county, is situated on the St. Francis river; it is a station of the Grand Trunk railway, and is 76 miles from Montreal.

It contains, besides the county buildings, 4 churches, 26 stores, 3 hotels, 1 grist-mill, 2 printing offices, 1 bank branch, a government post office building, &c. It is connected with Melbourne on the opposite side of the river by a municipal iron bridge.

During the spring freshets, almost every year, the town of Richmond is flooded to a height of 5 or 6 feet, owing to ice-jams formed in the River St. Francis, at a place called 'The Narrows.' In order to prevent the occurrence of the ice jams and the consequent floods, which have caused considerable damages in past years, it was decided to build four ice breakers, three above 'The Narrows' and one above and opposite the pier of the municipal bridge. In December, 1902, a contract was entered into with Mr. Ross, of Richmond, for the construction of the four ice breakers, for the sum of \$10,317. The work was commenced in February, 1903, and completed in September the same year.

In order to complete the system of protection, it was decided to build four additional ice piers situated 150 feet above a dam in the St. Francis river, about 10 acres above the bridge. The object of those ice piers is to retain the ice which runs over the dam during the winter and forms a large accumulation of ice a few hundred feet below the said dam and contributes largely to the spring floods. To that effect, an agreement was entered into with the contractor, September 28, 1903, for the construction of four additional ice piers of close-faced cribwork, 18 by 12 feet, to a height of 2 feet above the level of the water, fully ballasted, for the sum of \$4,000. The work was completed in December the same year.

In June, 1904, the slanting faces of the four ice breakers were sheathed with 3-16-inch steel plates, and the up stream corners of the four ice piers above the dam, sheathed with 1-inch steel plates at a cost of \$628.91.

The whole expenditure on that work is \$16,250.31.

The work has proved effective, as there have been no floods since the construction of the ice-breakers, and the municipal bridge, which was carried away in 1902 by the ice and rebuilt during the winter of 1903, has suffered no damage.

4-5 EDWARD VII., A. 1905

## RIMOUSKI.

The town of Rimouski, in the county of the same name, is situated on the south shore of the St. Lawrence river, 180 miles below Quebec, its population is about 2,000 inhabitants. It is an important station of the Intercolonial Railway; it is also the place where the royal mails are transferred from steamers to the railway.

The spring tides rise 15 feet; neaps, 9 feet.

Owing to the worm eaten condition of the east side of the wharf and also to widen the structure, which has a railway track thereon and is only 20 feet wide, it was decided to construct additional cribwork along the east side of the wharf on a length of 830 feet, 20 feet wide at the bottom, 18 feet wide at the top built to the height of the present wharf.

The works were commenced on May 1, 1904. During that part of the fiscal year, ending June 30, the remains of an old crib 250 feet long, and stone ballast that were obstructing the place to be occupied by the new cribs were removed by manual labour to extreme low water. The remaining part under water will have to be removed by a dredge.

Five cribs forming a length of 526 feet by 20 feet wide, 20 feet high, have been sunk.

The face timbers of those cribs are round spruce logs 27 feet long; their upper and lower faces are notched every 8 feet to a thickness of 10 inches with parallel faces, to receive the flatted ends of the cross-ties.

The cross-ties are round spruce of sufficient length to reach from side to side of the work, laid 8 feet apart, except the lower row where they are 4 feet, centre to centre.

Trifling repairs have been done to the flooring, and the western inclined slip was rebuilt on a length of 150 feet, for an average height of 8 feet.

At the end of the fiscal year, the sum of \$27,236.75 had been expended, a large quantity of materials was on hand for the continuation of the work. This work is being done by day labour.

## RIVER DU LIÈVRE.

The Long Rapid, River du Lièvre, is seven miles above the Little Rapids lock and dam, and 19 miles above the town of Buckingham. The construction, in 1892, of a lock and dam at Little Rapid, now called Poupore, rendered the River du Lièvre navigable through the Long Rapid and for one mile above, to the High Falls, which is reached daily during the season of navigation, by a steamer from Buckingham. Owing to the existence of large boulders, the narrow channel and swift current, the navigation through the Long Rapid was very dangerous.

During the fall of 1903, the sum of \$864.55 was expended in removing 35 boulders of sizes varying from 10 to 90 cubic feet, the largest having to be blasted.

Owing to a sudden rise of water, the work had to be abandoned at the beginning of October.

## RIVIÈRE DU LOUP.

Rivière du Loup, or the town of Fraserville, is the chef-lieu of the county of Temiscouata. It is situated on the south shore of the St. Lawrence, 114 miles below Quebec. It is a thriving little town of nearly 4,000 inhabitants, which contains several manufactories, including two pulp mills.

The River du Loup point, where the wharf is located, is distant two miles from the village; it is one of the best-known and most frequented summer resorts of the St. Lawrence. Spring tides rise 19 feet; neaps, 12 feet.

Owing to the action of the ice and waves, and also the considerable wear and tear due to the heavy lumber traffic, annual repairs are required on this wharf. During the fiscal year 1903-04, the following works were performed:—

## SESSIONAL PAPER No. 19

To meet the requirements of the Richelieu and Ontario Navigation Company and others, a movable slip, 41 feet long, 9 feet 4 inches wide, was built placed on the east side of the outer end; the old one, which was in bad state, has been thoroughly repaired.

A surface of 8,090 square feet, on the west side of the wharf, was sheathed with spruce 4 inches thick, and the sheathing of the outer end was also sheathed; 525 spruce deals, 3 x 9 inches, were used to repair the top planking.

Owing to the increasing traffic and the needs of tourists, the actual buildings were extended by the construction of an addition 30 x 24 feet, divided into two parts, a general waiting room and a freight shed; the whole was well finished and painted. The ladies waiting room and the agent's office were also painted. These new works and repairs were done during the months of September, October and November, 1903, at a cost of \$3,613.20.

## RIVIÈRE OUELLE.

The pier is situated at Pointe aux Orignaux, five miles from the village of Rivière Ouelle, in the county of Kamouraska, on the south shore of the St. Lawrence, opposite Murray Bay, on the north shore. A branch of the Intercolonial Railway, built from Rivière Ouelle station, to the outer end of the wharf, bears trains connecting with a steamer which crosses the St. Lawrence several times a day during the summer season, calling at Murray Bay and other places on the north shore.

Spring tides rise 20 feet; neaps, 12 feet.

During the month of May, 1904, the renewal of the sheathing of the outer end, which is 238 feet wide, by 51 feet long, was commenced; the old sheathing being worn out and decayed, was removed over the whole surface of the four sides of the head of the pier. The north-east corner was badly damaged, allowing the stone ballast to fall into the river through an opening existing in the face timbers near low water mark; this opening has been closed and the corner sheathed with 8 inches thick rock elm planks.

Twenty thousand eight hundred and forty-three feet B.M. of black birch, 20,378 feet of elm and oak, and 14,076 feet of tamarack have been used during the months of May and June to renew the sheathing of the outer end. Besides, 16,983 feet B.M. of black birch, 18,000 feet of elm and 12,500 feet of tamarack were brought and paid for out of the appropriation for the fiscal year, together with a certain amount of boiler plates to protect the outer corners.

The quantity of hardwood now in hand, is considered nearly sufficient to complete the repairs to the sheathing of the wharf.

The amount expended during the fiscal year ended June 30, 1904, was \$5,845.34.

## RIVER RICHELIEU BOOM AT ST. JOHN'S.

In order to give valuable assistance to boats passing through the swing span of the Vermont Central Railway bridge at St. John's, counties of St. John's and Iberville, a boom was constructed.

The boom has a length of 350 feet by a width of four feet, and is moored to clusters of six piles each, driven 15 feet into the ground every 50 feet, except the up stream cluster, which has ten piles, and is protected against the ice by a steel plate, 6 feet by 6 feet, 7-16 inch thick. The piles of each cluster are well secured together by screw bolts.

The boom stands in 9 feet of water at extreme low water level, and in 14 at extreme high water level.

The timber used is 12 by 12 inch hemlock for the booms, and round pine and oak 14 inches at butt end, for the piles.

The work was commenced in November, 1900, and completed in April, 1901, at a cost of \$1,504.45.



4-5 EDWARD VII., A. 1905

During the spring 1904, the head and two intermediate clusters of piles were broken by the ice, and the boom was also much damaged. A close-faced cribwork ice-breaker 20 by 12 feet and 18 feet high, was built in place of the head cluster of piles, to moor the boom; the two broken clusters of piles were renewed, the boom was repaired and sheathed diagonally with 3-inch pine deals.

The work carried out by day labour was completed on June 30, 1904, at a cost of \$1,259.88.

## ROBERVAL.

The town of Roberval, in the county of Chicoutimi, is built on the east side of the River Ouitchouanish, near its mouth, on the south shore of Lake St. John, 200 miles east of Quebec city and is the northern terminus of the Roberval branch of the Quebec and Lake St. John Railway which taps the main line at Chambord station.

In 1892-93, the department purchased from H. G. B. Beemer, Esq., for the sum of \$750 an isolated block of cribwork 75 feet long by 30 feet, which had been built by him at the mouth of the river, 425 feet from the shore of the lake, together with the right of way to the public road.

During 1892-93 and 1893-94, this block was connected with the shore by means of an approach 425 feet long, by 25 feet wide, at a cost of \$5,469.06.

In 1894-95, a head block parallel with the shore 50 feet by 30 feet and 30 feet in height, with a slip at the outer end, was added, and the entrance to the harbour was deepened and widened.

The cost of this work was \$4,200.41.

This pier as completed in 1895, was 500 feet long and 25 feet wide generally, with the exception of the headblock, which measures 50 feet by 30 feet, and has 8 feet of water along its outer face, at low water and 19 feet at high water during the season of navigation. In the winter the lake recedes beyond the head of the pier which is completely dry all round. During the year 1896-97, a combined freight and shelter shed, 45 by 24 feet, was erected on the head block at an expense of \$425.98.

In 1897-98, a block of cribwork, 75 by 25 feet, was sunk close to the crib purchased from Mr. Beemer for the purpose of widening that part of the wharf to 50 feet. Amount expended, \$715.86.

In 1899, the wharf was destroyed by fire and rebuilt in 1900-1901, for a length of 500 feet, a width of 30 feet and a height of 23 feet, a waiting-room 15 by 18 feet and a freight shed 15 by 28 feet were erected on the wharf.

Amount expended, \$9,747.82.

During the year 1902-03, the head of the wharf was widened 15 feet on the south side for a length of 60 feet by the construction of a block of cribwork, from that block a trestle work was built to the shore, the trestles are 8 feet apart and built of 12 by 12 spruce timber with four stringers of 12 by 12 ready to receive the sleepers, this extension was specially made to allow the Quebec and Lake St. John Railway to reach the wharf.

Amount expended, \$4,577.11.

During the fiscal year 1903-04, the greater portion of the trestle work built last year was planked over with 3-inch plank and between trestle work and the wharf, stringers were laid, resting on a cap piece 12 by 12 inches, the stringers are 10 by 10 inches and covered with planking of 3-inch deals.

The amount expended was \$653.45.

Total amount expended to July 1, 1904, \$26,502.69.

## SABREVOIS.

The parish of St. Anne de Sabrevois, in the county of Iberville, is situated on the east shore of the River Richelieu, 7 miles from Iberville, and 6 miles from St. Alexandre, on the Canadian Pacific Railway. It is a station of the East Richelieu Valley



## SESSIONAL PAPER No. 19

Railway. It has the largest creamery in the province of Quebec. ~~two cheese~~ factories, one hotel, three stores, one door and sash factory, one post and telegraph office, and two churches, one Roman Catholic and one Protestant.

In order to better accommodate the traffic by water to and from this place, an old wharf with a right of way from the public road to the river, a distance of 1,372 feet, was purchased from Mr. Wm. Ryan, for the sum of \$500. As the old wharf was dilapidated, a new wharf was built in its place.

The new structure consists of the following, viz.:—

(a.) A stone embankment 200 feet long by 20 feet wide, with slope 1 in 1 on the sides.

(b.) A trestle approach 120 feet long, 24 feet wide.

(c.) A head block of pile-work 108 feet long, parallel to the channel, by a width of 30 feet, with an ice-breaker of crib-work at its upstream end.

The work, carried out by day-labour, was commenced in February, 1900. The work was continued during the next fiscal year and completed in November, 1901.

In June, 1902, the sum of \$988.07 was expended to raise, improve and fence the roadway.

During the spring of 1903, the road was under water for several days and greatly damaged by the waves. During March and April, 1904, the road was raised 2 to 3 feet for a distance of 500 feet from the wharf, 15 feet wide on top, with stone and gravel.

The work was completed in June of the same year. Expenditure during the fiscal year, was \$693.14.

Total expenditure on that work, \$8,264.91.

## ST. ALEXIS.

St. Alexis, is on the south shore of Ha! Ha! bay, River Saguenay, about 63 miles from its mouth.

In order to accommodate the increasing trade of the locality and afford landing facilities at this place for the steamers frequenting the River Saguenay, the sum of \$4,000 was appropriated at the session of parliament of 1898 for the construction of an isolated block. The block is 50 feet long by 25 feet wide, and 27 feet high, the outer end is a distance of 1,446 feet from the high water mark of spring tides.

In 1899-1900, two blocks, one 80 feet and the other 68 feet in length were built from shore in view of connecting the outer block; these blocks are 25 feet wide and 20 feet high at the outer end.

The expenditure was \$3,999.

In 1900-01, an addition of 250 feet long and 25 feet wide was built at the cost of \$4,016.63.

During the year 1902-03, an extension to the shore wharf, 150 feet in length, 25 feet wide, and 21 feet high at the outer end, was built. The work done is open-faced cribwork, and built 11 x 11-inch face timbers with fenders at every 10 feet, the flooring is of 3-inch red spruce. The structure is filled with stone. Expenditure, \$3,994.71.

Expenditure, \$4,000.01.

During the year 1902-03, an extension to the shore wharf, 150 feet in length, 25 feet wide, and 21 feet high at the outer end, was built. The work done is open-faced cribwork, and built 11 x 11-inch face timbers with fenders at every 10 feet, the flooring is of 3-inch red spruce. The structure is filled with stone. Expenditure, \$3,994.71.

During the last fiscal year, five piers located 25 feet apart, were built, the first one from the old work is 20 by 35 feet, with a landing slip, the other four are 20 by 25 feet, a portion of the wharf built last year was completed with stringers and flooring, the span and the top of the first pier were also completed, the stringers are 10 by 12 inches, the four other piers are ready to receive the corbels and stringers.

Amount of expenditure during the year, \$4,082.35.

Spring tides rise 18 feet; neaps, 11 feet.

Total of expenditure, \$24,067.41.

4-5 EDWARD VII., A. 1905

## ST. ALPHONSE.

St. Alphonse de Bagotville, is at the head of Ha ! Ha ! bay, on the southern shore of River Saguenay, sixty-six miles from its mouth.

A landing pier was built here prior to confederation by parochial authorities at a cost of about \$3,200. In 1876, an arm was built by the department on south side of this pier. 55 feet long by 26 feet wide, at a cost of \$3,084.34.

In 1881, the pier was strengthened and repaired at a cost of \$3,897.20. During 1881-82, 378 feet of the original pier which had been burned down to low water level at the shore end was rebuilt for an average height of 10 feet, a large portion of the flooring renewed and other repairs effected, at the cost of \$2,204.59.

In 1882-83, a block of cribwork was sunk close to the pier and filled with stone. Expenditure, \$4,307.40.

During the year 1883-84, the block was completed at the cost of \$3,586.03.

In 1884-85, the work executed consisted in raising the wharf 2 and 3 feet over its length, constructing a movable slip and erecting an open shed 80 by 66 feet on the outer end.

Expenditure, \$4,680.55.

Repairs were made to the flooring of the wharf in 1887-88, at a cost of \$216.98.

In 1888-89, the flooring of the wharf was renewed for 300 feet of its length and a slip was built.

Expenditure, \$1,024.54.

In 1889-90, the flooring at the end of the wharf was renewed and other repairs executed at a cost of \$809.27.

During the year of 1890-91, the planking of the wharf was renewed over the western 200 feet, a quantity of stone ballast was put in.

Expenditure, \$1,000.

In 1893-94, the work executed consisted in sheathing a length of 260 feet with six inch red spruce.

The expenditure amounting to \$1,200.

During the fiscal year 1896-97, a shed 30 by 45 feet was built on the eastern side of the pier, the face timber on the slip was renewed.

The expenditure, \$487.78.

In 1898-99, the planking and stringers have been completed on a length of 275 feet, and the north-east side of the pier was sheathed with 5-inch tamarack over a length of 275 feet.

The work was done by day labour at a cost of \$3,000.57.

During the year 1899-1900, the north and south sides of the pier for a distance of 250 feet was sheathed with 5-inch tamarack and the planking was renewed over the same length at a cost of \$548.

The wharf is 436 feet in length 24 feet in width, with an outer block of 40 feet in length by 85 feet in width, with a depth of 18 feet of water at low water spring tide at the outer end of the wharf giving the structure a total height of 40 feet.

The work done during the year 1902-03, consists in general repairs to the flooring, the shed, and new fenders. The shed was roofed with sheet iron.

The amount expended was \$1,500.

During the fiscal year 1903-04, a crib 30 by 30 feet was built on the west side of the wharf with a landing slip, this crib is built of open face timber, sheathed with 3-inch plank and fendered every 8 feet with 8 by 10 inch timbers, it is ballasted and entirely completed.

The sheet iron roof of the sheds was renewed, a new waiting-room, freight shed, and cheese cold storage room were built and painted, the repairs to the flooring were commenced.

Spring tides rise 18 feet, neaps 11 feet.

Amount expended in 1903-04, \$2,465.77.

## SESSIONAL PAPER No. 19

Total expenditure by municipality, \$3,200.

Total expenditure by federal government up to July 1, 1904, \$35,862.49.

## ST. ANDRÉ.

The village of St. André, in the county of Temiscouata, is situated on the south shore of the St. Lawrence, about fifteen miles west of River du Loup and 100 miles below Quebec.

The place is somewhat frequented as a summer resort; it contains a foundry and an important machine factory.

Spring tides rise 19 feet; neaps, 12 feet.

The wharf owned by the Department of Public Works at St. André, consists of an earthen embankment 850 feet long with a mean height of 6 feet and nine piers connected by platforms of 30 feet spans.

During the months of September and October, 1903, the repairs and improvements to the earth approach to the wharf have been continued; a length of 253 feet was thoroughly repaired, the expenditure being \$750.

In the course of the month of May, 1904, the construction of an addition to the wharf, 80 feet in length, on a width of 26 feet, was commenced. At the close of the year, nearly three-quarters of the structure was built; it consists of close-faced crib-work filled with stone. The work has been done by day labour at a cost of \$3,120.42, forming a total expenditure of \$3,120.42 for the fiscal year 1903-04.

## ST. CHARLES DE CAPLAN.

St. Charles de Caplan is on the north shore of the Baie des Chaleurs, in the county of Bonaventure.

During the year 1903-04 a contract was let to build a breakwater at this place for the sum of \$13,700. The work is to be 400 feet long and 20 feet wide.

The work done during the year 1903-04 amounted to \$5,118.80, but was not completed at the end of the fiscal year.

## ST. FELICIEN.

St. Felicien, a post village in Chicoutimi county, is on the Assametquagon river, 15 miles from Roberval, on the Quebec and Lake St. John Railway, it contains one Roman Catholic church, 5 stores, 1 hotel, and four saw-mills. Population, 1,200.

During the year 1895-96 a wharf was built to accommodate the local trade. It is 70 feet in length, 26 feet in width and 22 feet high at the outer end, at which vessels drawing 8 feet can lie at low water. A shed 20 feet square was erected on the wharf at its outer end.

During the year 1899 an addition 90 feet long, parallel with the channel, and 40 feet wide was constructed at right angles to the wharf at its outer end.

During the year 1900, the sheathing which had been damaged by ice, was renewed on a length of 30 feet and 10 feet high at a cost of \$100.

During the fiscal year 1903-04, 15 boulders obstructing the channel were removed. Amount expended \$302.94.

Total expenditure up to June 30, 1904, \$3,503.81.

## ST. FIDÉLE.

St. Fidèle, is situated on the north shore of the St. Lawrence, 9 miles below Murray Bay and in the county of Charlevoix.

4-5 EDWARD VII., A. 1905

During the fiscal year 1903-04, the sum of \$3,704.85 was expended for the purchase of timber to be used in the construction of a wharf at this place. It was afterwards decided to build the work by contract.

## ST. FRANÇOIS, ISLAND OF ORLÉANS.

St. François, is situated at the lower end of the Island of Orleans, in the county of Montmorency.

During the fiscal year 1903-04, the isolated block commenced in 1902-03, on the south shore of the island, was completed, the work was done by contract.

The expenditure for the year 1903-04, was \$8,305.96.

## ST. FULGENCE.

St. Fulgence (otherwise called L'Anse aux Foins) is a small village in Chicoutimi county, on the north shore of the Saguenay river, ten miles below Chicoutimi.

It contains one Roman Catholic church, four stores and two saw-mills.

During the year 1903-04 the construction of a wharf was commenced, it consists of a shore approach, 75 feet in length, 22 feet in width and 10 feet in height, and of a block of cribwork 25 x 22 feet, 14 feet high, placed at a distance of 25 feet from the outer end of the approach.

This work is built of round logs open-faced, and intended to be sheathed; the whole is fully ballasted.

Expenditure, \$998.37.

Spring tides rise 20 feet, neaps, 13 feet.

## ST. GÉDÉON ISLANDS.

St. Gédéon Islands, Chicoutimi county, in the parish of St. Gédéon, are situated near the south-east shore of Lake St. John, thirty-nine miles west of Roberval. The parish contains one Roman Catholic church, several stores, post office, two cheese factories, two saw-mills, telegraph and railway station. Population, 1,200.

During the fiscal year 1903-04, a certain quantity of timber was purchased in view of the construction of a wharf at that place.

Amount expended, \$2,172.04.

## ST. IRENÉE.

St. Irenée, is situated on the north shore of the St. Lawrence, in the county of Charlevoix.

During the fiscal year 1903-04, the sheathing of the extension to the wharf, built in 1902-03, was completed.

The expenditure for the year 1903-04, was \$7,613.06.

## ST. JEAN CHRYSOSTÔME.

Every spring, during the freshets, the English river and the Black river overflow and cause considerable damage in the village and parish of St. Jean Chrysostôme, an area of about 2,600 square arpents of land, is under three to five feet of water during several days. In order to prevent, or at least considerably diminish those disastrous floods, it was decided to deepen the bed of the English river from its confluence with the Black river, opposite the village of St. Jean Chrysostôme, on a distance of 500 feet a width of 60 feet and a depth of 4 feet. At that place the bed of the English river is solid rock and 4 feet higher than the normal bottom, acting as a dam which causes the water to overflow upon the surrounding low lands. To that effect, the sum of \$5,000 was voted by parliament during the session of 1903.

## SESSIONAL PAPER No. 19

During November, the same year, the sum of \$892.98 was expended to procure and install a steam rock drill and boiler, and to blast and remove a certain quantity of rock, but owing to the short days and cold weather, the work had to be suspended, it was resumed in May, 1904, and continued until June 30, but was not completed.

The work was carried out by day labour.

Expenditure during fiscal year 1903-04, \$2,875.69.

## ST. JEAN, ISLAND OF ORLÉANS.

St. Jean is situated on the south shore of the island of Orleans, in the county of Montmorency.

During the fiscal year 1903-04, the flooring of the wharf was partly renewed and the sheathing was repaired.

The expenditure for the fiscal year 1903-04, was \$1,266.53.

## ST. JEAN PORT JOLI.

The village of St. Jean Port Joli, in the county of L'Islet, is situated on the south shore of the St. Lawrence, 60 miles below Quebec. Spring tides rise 21 feet; neap tides, 13 feet.

The wharf at that place has a total length of 454 feet; a depth of water of 5 feet is left at the outer end, at low water spring tides. The wharf consists of a shore part or approach composed of platforms connecting piers, 180 feet long and 18 feet wide; a middle section 174 feet in length, open cribwork and a head block 100 feet long, 30 feet wide, close-faced cribwork. This wharf was vested in the Crown only a few years ago, and was in a bad state of repairs.

In the fiscal year 1902-03, the top planking, which was worn out, has been entirely renewed.

During the fiscal year 1903-04, the following works were performed: 25,000 feet B.M. of spruce deals, 4 inches thick, have been used in sheathing part of the face timbers damaged by ice; 8 mooring posts were renewed and 500 lineal feet of cap pieces have been replaced. The stringers of two platforms of 30 feet spans were renewed, and general repairs done to the shore end or approach.

These works were done by day-labour at the cost of \$1,116.41.

## ST. JÉRÔME.

St. Jérôme, Chicoutimi county, is a village situated on the south-east bank of Lake St. John, 24 miles east of Roberval; besides the church, post office, telegraph and railway station, the parish contains several stores, 3 cheese factories and 2 saw-mills.

The wharf built at this place in 1899-1900 consists of an approach 75 feet in length, 25 feet in width and 15 feet in height, filled with ballast, sand, &c., two outer blocks 75 feet in length by 25 feet in width and 25 feet spans between, which are connected by stringers and planking. The total length of the wharf is 275 feet, planked over on its whole length.

Amount expended \$4,999.28.

During the year 1900-01, an addition 400 feet long, 25 feet wide and 24 feet high was commenced.

Amount expended \$6,933.90.

In 1901-02, the extension was completed.

Amount expended, \$1,999.97.

During the year 1902-03, a block 60 feet in length by 25 feet wide and 27 feet in height, was sunk in 7 feet of water at low water, 110 feet from the present wharf, with the intention to connect this block by the construction of two piers and spans. The

4-5 EDWARD VII., A. 1905

block was built with a landing slip, and the head sheathed with 8-inch hardwood planks and ballasted with stones.

Amount expended \$2,595.20.

During the fiscal year 1903-04, two blocks of cribwork were built in the space between the outer block and the wharf, the corbels and stringers 10 by 12 inches for two of the spans were laid and covered with 3-inch planks.

The amount expended was, \$2,191.92.

Total amount of expenditure to July 1, 1904, \$18,674.99.

#### ST. MARC DE COURNOYER.

St. Marc, is a post village and parish, in Vercheres county, on the Richelieu river, 9 miles from Beloeil station, on the Grand Trunk Railway. It contains one Roman Catholic church, 3 stores, 2 grist-mills and cheese factory. Population, 968.

In August, 1901, an old wharf, built by the citizens of the locality, situated about two miles above the village, was given to the Crown free of charge, and the construction of a new wharf, at that site, was commenced. It consists of a head block of pile-work, laid at the outer face of the old wharf; the new work has a length of 87 feet, by a width of 16 feet for 63 feet up stream, and a width of 32 feet for the remaining 24 feet; at its upstream end, there is a close timber ice-breaker, 4 feet higher than the flooring of the head block. The outer face of the head block is 16 feet high, and stands in 9 feet at low water.

The old wharf, which is used as an approach to the new one, has been raised about 4 feet to the level of the floor of the head block, with stone and a layer of gravel and sand on top, the sides of the approach are rip-rapped and slope 1 in 1.

The work, carried out by day labour, was completed in June, 1902, at a cost of \$3,245.67.

During the fiscal year 1903-04, a storehouse 16 x 20 feet was erected on the wharf, and the width of the stone approach was increased by 10 feet.

The work was completed in June, 1904, at a cost of \$501.93.

Total expenditure on that work, \$3,744.54.

#### ST. MATHIAS.

St. Mathias, is a post village and parish in Rouville county, on the Richelieu river. It contains a Roman Catholic church, 1 hotel, 2 stores, 1 saw-mill and 1 butter factory. Population, 657.

In order to better accommodate the traffic carried out on the public wharf, built in 1902-03, two storehouses were erected, one small and portable, 12 x 12 feet, on the wharf, intended to be removed in the fall after the close of navigation, and replaced in the spring after the floods; and a larger and permanent one, 20 x 24 feet, placed about 300 feet inland from the wharf, above the highest water mark.

The work was completed June 30, 1904. The expenditure during the fiscal year was \$480.31.

#### ST. MICHEL.

St. Michel, in the county of Bellechasse, lies on the south shore of the St. Lawrence, fifteen miles below Quebec.

The site of the village is picturesque and the place is frequented as a summer resort. The coasting steamer 'Champion' calls there twice a day, giving good facilities for the shipment of farm produce.

Spring tides rise 21 feet; neap tides, 13 feet.

Since 1900, heavy repairs have been done to this wharf, which is 1,100 feet long, 30 feet wide, with a headblock 50 x 40 feet.

## SESSIONAL PAPER No. 19

During the fiscal year 1903-04, the repairs have been continued and the following works were performed: renewal of the face timbers for a length of 240 feet, on a mean height of 7 feet; one thousand feet of new cross-ties and longitudinals have been put in; the top planking was renewed over a surface of 7,200 square feet; the fenders and sheathing, on a length of about 200 feet, have also been replaced with new timber, the shed standing on the headblock, and all the mooring posts were painted. The expenditure amounting to \$2,412.34.

Owing to the scouring of the bottom by the waves and current, the headblock had settled down and it became necessary to drive a row of sheet piles around its faces. During the month of May, 1904, 110 pieces of pitch pine, 10 x 12 inches, in lengths of 30 to 37 feet, were purchased; a pile driver was also constructed.

During the month of June, the driving of the piles was started, and at the close of the fiscal year, the work was progressing rapidly. The amount expended during the year was \$5,442.47.

## ST. NICHOLAS.

St. Nicholas, county of Lévis, is situated on the south shore of the St. Lawrence, fifteen miles above Quebec.

During the fiscal year 1903-04, the sum of \$142.14, was expended in minor repairs to the wharf at this place.

## ST. SIMÉON.

St. Siméon, is situated on the north shore of the St. Lawrence, in the county of Charlevoix, eighteen miles below Murray Bay.

During the fiscal year 1903-04, the sum of \$2,992.20 was expended in the purchase of timber for the construction of an extension to the isolated pier towards the shore. It was decided afterwards to build the work by contract.

## ST. VALENTIN, NOW ST. PAUL DE L'ÎLE AUX NOIX.

St. Paul de L'Île aux Noix, is a post village and parish in St. John's county, on the River Richelieu, two miles from Scottsville, on the Grand Trunk Railway, and twelve miles south of the town of St. John's. It contains one Roman Catholic church, five stores, three hotels, one brick factory and telegraph office. Population, 614.

During May and June, 1904, the landing pier, built at that place in 1897 and 1898, was repaired. Corbels and stringers 6 x 12 inches, were placed between the existing ones which are 6 feet 4 inches apart on the piles approach and headblock of crib-work; three-fourths of the flooring was renewed, and a storehouse, 16 x 20 feet was erected on the wharf.

The work carried out by day labour, was completed June 30, 1904, at a cost of \$1,158.15.

## ST. ZOTIQUE.

St. Zotique, is a post village and parish, in Soulanges county, on the north shore of Lake St. François, two and a half miles west of Coteau Landing. The village contains one Roman Catholic church, two hotels, two stores and one telegraph office.

The wharf at that place consists of a headblock 132 feet 4 inches in length by 24 feet in width, while the approach, composed of thirty-four cribs, placed at intervals of 20 feet, varies from 8 to 12 feet in width.

During June, 1904, several stringers of the approach were renewed, and the flooring of the head block and approach were repaired.

The work was carried out by day labour at a cost of \$509.01.



4-5 EDWARD VII., A. 1905

## STE. ANNE DE LA PÉRADE.

Ste. Anne de la Perade, is a post village in Champlain county, on the River Ste. Anne and on the Canadian Pacific Railway, six miles from Batiscan, fifty-five miles west by north of Quebec. It contains one Roman Catholic church, one match factory and one butter and seven cheese factories, two hotels and a dozen stores. Population, village and parish, 2,550.

During the fiscal year 1903-04 repairs were made to the upper and lower dykes built in 1894 and 1895 and forming a system of protection against the considerable erosions that have occurred at that place after the land slide at St. Albans. A dyke of dry stone, 10 feet wide at the base, 4 feet wide at the top and 4 feet high, was built on the western bank of the west channel, from the municipal iron bridge, up stream, for a distance of 900 feet, to protect the buildings of that part of the village against the shove of ice during the spring freshets. A dyke had been built of dry stone at the head of St. Ignace channel, to prevent the yearly erosions along the banks of that channel, but was an inconvenience to the riparian owners who take their supply of water from the channel, in order to remedy this, a culvert 3 feet wide and 5 feet high was made at the bottom of the dyke.

The work carried out by day labour was not completed June 30, 1904  
The expenditure during the fiscal year was \$3,000.

## STE. ANNE DE LA POCATIÈRE.

The village of Ste. Anne de la Pocatière, in the county of Kamouraska, is situated on the south shore of the St. Lawrence, seventy-four miles below Quebec.

Spring tides rise 20 feet; neap, 12 feet.

The wharf at that place consists in an approach built of stone and earth, together with twelve piers, 20 feet square, connected by platforms of 25 feet span.

During the winter of the year 1902, this wharf was almost totally destroyed by an ice-shove. Five piers were carried away a distance of nearly 100 feet and badly damaged; of the seven others, two were much injured and had to be completely rebuilt; the top planking was broken and scattered about.

In March, 1903, a sum of \$70.15 was expended to gather and save the broken timbers of the wharf.

The reconstruction began during the month of May, 1904, and at the close of the fiscal year ended June 30, 1904, the work was progressing. One of the cribs, which had not been too much damaged, was floated and put in place; the new cribs are being built more substantially and of greater dimensions, being made 30 feet square instead of 20 feet. Nearly all the timber, necessary to complete the work, has been bought and paid for.

The work was done by day labour at the cost of \$4,280.70.

## STE. ANNE DE SOREL.

The village of Ste. Anne de Sorel, in the county of Richelieu, is situated on the south shore of the St. Lawrence at the head of Lake St. Peter, two miles below Sorel. In order to prevent the ice being carried on the low lands during spring freshets, ice piers have been built in the vicinity of Ste. Anne and on Chenal du Moine opposite.

During the fiscal year 1903-04, the ice pier opposite Sheppard's Mill was repaired and raised 7 feet at a cost of \$725.

At Ste. Anne de Sorel, a new pier, 20 by 24 feet, 15 feet high, was built on the property of Damase Lavallée, also a new one on Ile du Moine, to replace the old pier which was beyond repair. Another pier in this vicinity was repaired, at a total cost of \$3,793.38.

On the west side of the Richelieu river a new pier was built, 20 by 24 feet and 18 feet high, at a cost of \$2,997.92, making a total expenditure, for the fiscal year 1903-04, of \$7,834.13.

## SESSIONAL PAPER No. 19

## STE. ANNE DES MONTS.

The sum of \$199.45 was expended towards the removal of 250 cubic yards of stones placed in cribwork 40 by 15 by 10 feet, built as a training pier, and to be used for the loading of small boats at the mouth of the little Ste. Anne river, county of Gaspe.

## STE. ANNE DU SAGUENAY.

Ste. Anne du Saguenay, Chicoutimi county, is situated on the north shore of the Saguenay river, 72½ miles above Tadousac, and opposite the town of Chicoutimi. Its population is about 2,000. Besides the church and post office, the parish contains seven stores, four cheese factories, a lime-kiln, a brickyard, a pottery and a saw-mill. The only market for the produce of the farms of this section of the north shore of the river is Chicoutimi.

Spring tides rise 17 feet; neaps, 9 feet.

Construction.—As early as 1879, the Dominion government was urged to construct a landing pier for the accommodation of the inhabitants of the district. The request was not, however, considered until 1888, when a portion of the timber for the proposed structure was purchased at a cost of \$2,100.

In 1889, the pier was commenced from shore outward, and at the close of the year 1888-1889, a portion 77 feet long and 30 feet wide on its lower or eastern face had been completed at a cost of \$2,109.60. It was built of close-faced cribwork, filled with stone ballast. In 1890 this shore block was extended 87 feet on a width of 27 feet, at a cost of \$2,045.50, and in 1891, a further length of 50 feet of similar work was built at an additional cost of \$2,498.96.

In 1892, a headblock 30 feet long, 60 feet wide and 20 feet high was built at a distance of 250 feet from the end of the work, completed the previous year, at a cost of \$2,262.11, and in 1896 this block was raised 8½ feet and put on the same level as that of the work built out from shore, viz., 6 feet above ordinary high water spring tides.

With a view of completing the pier to shore, a sum of \$5,575.25 was expended in 1897 for the construction of two cribs, each 87½ feet long, and 25 feet wide, placed 25 feet apart and 25 feet from both the head and shore blocks.

During the year 1898, the three 25-foot openings left in the work were spanned, the flooring was laid and the structure completed to shore at a cost of \$746.70. The pier is now 494 feet long, 39 feet wide for the first 95 feet from shore, 27 feet wide for the following 119 feet, 25 feet wide for the next 250 feet, and finally 60 feet wide for the last 30 feet. It is 28½ feet high above the bottom of the river, at its outer end, and stands in 7½ feet of water at low water spring tides. It is substantially built throughout of close-faced cribwork filled with stone ballast. Some boulders were removed in 1894 from the vicinity of the head of the pier at a cost of \$99.30.

During the whole season of navigation a steamboat performs a regular ferry service every hour from Ste. Anne to Chicoutimi.

During the year 1899, the planking of that part of the pier constructed in 1888 was renewed over a length of 250 feet, the sides of the cribs built in 1897 were sheathed on a length of 200 feet and fenders were placed at the angles.

The work was done by day-labour, at a cost of \$1,099.81.

During the year 1900, the outer block for 110 feet was sheathed with tamarack, about 300 feet of the planking was renewed with 3-inch tamarack at a cost of \$1,499.99.

During the year 1901, the sum of \$2,507.36 was expended in renewing the planking of the wharf over a length of 240 feet and a width of 25 feet. The upper side of the wharf was sheathed over a length of 110 feet, with 6-inch tamarack, and a shed, 45 feet by 30 feet, was also erected on the wharf.

During the year 1901-02, a crib 40 feet wide and 27 feet high, was constructed at the eastern extremity of the wharf. It is fully sheathed with 5-inch tamarack. The flooring of the wharf was renewed on a space 200 feet long and 27 feet wide.

Expenditure, \$3,102.07.

## 4-5 EDWARD VII., A. 1905

During the fiscal year 1902-03 a movable slip was built, a waiting-room was commenced, the flooring of the wharf was renewed at different places.

Expenditure, \$1,523.30.

The wharf stands to-day 475 feet in length, 30 feet wide for the first 130 feet from shore, 27 feet wide for the next 325 feet, and finally 100 feet for the last 30 feet of its length, it stands  $28\frac{1}{2}$  feet high above the bottom of the river at its outer end in  $7\frac{1}{2}$  feet of water at low water spring tides.

The wharf has a return on the western side of the shore end 120 feet in length, 32 feet wide, which reaches the rock bank of the river.

During the fiscal year 1903-04, the shed was covered with sheet iron, the waiting-room was completed, a freight shed was built, and the flooring was repaired.

Amount expended during the year \$1,101.80.

Total expenditure to July 1, 1904, \$29,124.26.

## STE. EMILIE.

Ste-Emilie, county of Lotbinière, is on the south shore of the St. Lawrence.

During the fiscal year 1903-04, the sum of \$156.87 was expended in building a trestle roadway from shore to the isolated block, on which a small shed 12 by 12 feet, was also built.

## STE. FAMILLE, ISLAND OF ORLEANS.

Ste. Famille, is situated on the north shore of the island of Orleans, in the county of Montmorency.

On May 28, 1904, a contract was awarded for the sum of \$17,664 for the construction of an extension to the wharf at this place.

The structure is 200 feet long, 30 feet wide and 21 feet high at the outer end.

At the end of the fiscal year 1903-04, the work was progressing, the amount paid to the contractors was \$3,704.85.

## STE. GENEVIÈVE.

Ste. Geneviève, is an incorporated village in Jacques Cartier county, on Rivière des Prairies, three miles from Beaconsfield, the railway station, and five miles from Pointe Claire. The village contains one Roman Catholic church, one convent, one commercial college, two hotels, butter and cheese factories, one telegraph office and fourteen stores. There are excellent mineral springs in the vicinity.

Population, 1,186.

During the fiscal year 1903-04 the following repairs were made to the pier at that place; the two top tiers of timber of the three cribs and abutment were renewed; 12 x 12-inch post was placed inside the down stream corners of each crib and secured to every piece of the face timber with screw bolts; the wooden stringers were replaced by three 18-inch I-steel beams with three rows of channel iron between, and 6-inch I-steel beams laid across every three feet and secured to the main beams; new flooring of 3-inch pine deals was laid diagonally and an iron guard railing was placed on both sides.

The work carried out by day labour was completed on June 30, 1904, at a cost of \$2,492.94.

## SHIGAWAKE.

Shigawake is a post village on the north shore of Baie des Chaleurs, in the county of Bonaventure.

During the year 1903-04, construction timber and ballast stone were purchased for the sum of \$2,818.02. The work is to be done by day labour.

## SESSIONAL PAPER No. 19

## SOREL.

At the beginning of the fiscal year, viz., July, 1903, the crib superstructure was almost completed as well as the bents of the pile wharf, so that the work remaining besides the dredging was mostly to finish loading the cribs with stone and forming the earth embankment at the rear of the wharf. This progressed favourably, the material for filling being taken from the excavation.

Three dredges were at work part of the autumn and the excavating of the whole space along the new dock, to deep water (30 feet) was completed on November 13, 1903. The rip-rap revetment was laid along the slope at the rear of the earth embankment except about 50 feet in length at the south-east angle.

Thirty anchor tie-rods were laid in trenches to stay the pile wharf and resist the outward pressure of the sand against the framed structure. They are fastened by bolts to the post at the rear of the bents, and the other end is held in place by a heavy nut tightened against two cross pieces of channel iron, and a plank pannel buried in the sand.

In the spring of 1904, the stone filling of the cribs was completed and the earth filling levelled and made ready for the stone revetment. At the end of June the work remaining to be done consisted of the cast-iron mooring posts to be planted in concrete forms, and the stone surfacing over the whole of the wharf. The amount expended during the fiscal year 1903-04 was \$44,224.75.

## TADOUSAC—FISH HATCHERY.

During the fiscal year 1902-03 the dam of the fish pond was extended a further length of 60 feet, and the old portion sheathed with tamarack deals, the plank walk from the wharf to the pond, and a small kiosk built on a pier sunk in the pond, together with a plank approach thereto, the sum of \$928.62 was expended.

During the fiscal year 1903-04, the kiosk was painted, and the dam was sheathed inside.

Amount expended \$371.73.

Total amount of expenditure \$1,297.11.

## TADOUSAC WHARF.

Tadouac, or l'Anse à l'Eau, the chef-lieu of the county of Saguenay, is a watering place on the north-eastern side of the Saguenay river, about 5 miles above its mouth, which is much frequented by tourists and health seekers during the summer season. The village contains three churches, one of which is the oldest church built in Canada, having been erected in 1747, four hotels and stores, a telegraph office and many handsome villas, a fish hatchery has also been erected here by the Department of Marine and Fisheries.

Some 50 years ago, or more, the lumbering firm of Price Brothers & Co., of Chicoutimi, built at L'Anse à l'Eau, which constitutes the harbour of Tadousac, a wharf for their own use and convenience, of round logs and slabs, and partly faced the same with square timber and ballasted the work with stone. This wharf had a total length of 366 feet and a general width of 26 feet excepting a block at the west end which measured 4 feet by 50 feet by 29 feet in height, the depth available along its outer face at lowest water being about  $7\frac{1}{2}$  feet. In the absence of any other landing this wharf was not used alone by the firm who built it, but was also taken advantage of by the Richelieu and Ontario Navigation Company, as well as the general public.

The structure having become too dilapidated to be of further service for the public the federal government decided in 1880 to carry out the works of repairs required, to permit of the wharf being used for general shipping and landing purposes

4-5 EDWARD VII., A. 1905

as in previous years. Accordingly, in 1887-88 and 1888-89 the whole wharf was raised 3 feet, and a new plank floor put on throughout, a new inclined slip was also built. In 1889-90 a block 30 by 30 by 43 feet in height, was sunk 30 feet to the westward of the main structure, and in the following year the two blocks were connected by a timber span 30 by 30 feet, and in 1893-94 a new roadway or approach to the pier from the upland or embankment of earth 525 feet long by 25 feet wide was built.

The wharf as completed in 1894, has a total length of 225 feet on the outer or channel face, and is 108 feet wide for 165 feet in length at the eastern end, and 30 feet for the remaining 60 feet at the western end.

By a deed of sale dated December 10, 1896, Messrs. Price Brothers & Co., have conveyed to the federal government all their rights and interest to the wharf and the land on which it stands, as also to the roads and approaches thereto, for the sum of one dollar; reserving however, the right of using in perpetuity a portion of the wharf 35 feet by 25 feet for the purpose of piling firewood thereon and the right of access to the wharf in perpetuity, to land, or ship merchandise as they may require, whether with steamers, schooners or other crafts.

During the fiscal year ended June 30, 1897, a combined shelter and freight shed waiting room, covering an area of 60 by 30 feet was erected close to the channel or southern side of the wharf, and this face has been sheathed with 5-inch tamarack for a length of 160 feet; moreover the hand rails on the approach have been painted.

Expenditure incurred in 1896-97, \$1,474.93.

During the year 1902-03 the roadway of the approach was repaired, the sheathing of the two western corners of the wharf were renewed with hardwood timber. The shed repaired and painted.

Expenditure \$1,062.10.

During the fiscal year 1903-04, the wharf which had been broken by the steamer 'Virginia' was repaired.

Amount expended, \$100.

Total expenditure to June 30, 1904, \$19,480.34.

Spring tides rise 17 feet, neaps, 10 feet.

### THREE LAKES.

Lake Megantic is about seventy-three miles south-east of Sherbrooke; length, twelve miles; average breadth, two to four miles, with a coast line of over thirty-six miles. This lake and the rivers that run into it form the head waters of the Chaudière river.

In 1885 a wharf was built at a point called Three Lakes or Flint's.

During May and June, 1904, the head of the wharf, which had been damaged by the ice, was repaired; the whole wharf was raised 2 feet, fully ballasted and a layer of gravel put on top, the road from the wharf was partly raised and improved and a small waiting-room was erected on the wharf. The work carried out by day labour was completed June 30, 1904.

The expenditure during the fiscal year was \$731.88.

### TICOUABÉ

Ticouabé, or St. Méthode, a post village in Chicoutimi county, is situated at the outlet of the river of the same name, twenty-one miles from Roberval.

A small landing was built at this place during the year 1897-98 to accommodate the local trade and to help its development. The wharf consists of a solid block of close-faced cribwork 30 x 30 feet, built a small distance from the shore and connected to it by a platform, supported on trestles, 103 feet long and 25 feet wide, a combined freight and shelter shed, 25 feet by 30 feet was also built.

Amount expended, \$1,611.79.

## SESSIONAL PAPER No. 19

In the spring of the year 1902-03, the wharf was badly damaged by ice.

During the fiscal year 1903-04 the trestles were renewed and the space between the trestles being too large their number was increased and corbels were put on to support the floor-stringers. The outer pier of the wharf was levelled and to prevent any sinkage and give it more strength the head was surrounded with pile-work.

Amount expended, \$792.08.

Total amount of expenditure, \$2,522.64.

## TROIS PISTOLES.

Trois Pistoles in the county of Temiscouata, is an important village on the Inter-colonial Railway, twenty-five miles below River du Loup. The land in the vicinity is fertile and the place is flourishing. It is somewhat frequented as a summer resort. Along the River Trois Pistoles, stand large saw-mills and a pulp-mill. Spring tides rise 18 feet; neaps, 10 feet.

The harbour being much exposed to north and north-easterly winds, navigators were complaining of want of proper shelter for their craft; it was decided to build a breakwater across the entrance of the harbour. During the month of May, 1904, the work was commenced. It consists of a crib 250 feet in length, 20 feet wide at the base, with a batter of 1 in 12 on the sides, to be built to a height of 14 feet; advantage has been taken of a high bottom for the site of the breakwater which will stand about 2 feet above high water mark when completed.

At the close of the fiscal year, about two-thirds of the structure was built; the work was done by day labour and the expenditure was \$5,045.44.

A considerable quantity of materials, timber and iron, are now on hand and have been paid for out of that amount.

## VERCHÈRES.

Verchères, is a post village and parish in Verchères county, on the south shore of the St. Lawrence river, and on the South Shore Railway, 21 miles from Montreal. It contains 1 Roman Catholic church, 4 stores, 1 hotel, 2 saw-mills and 1 butter factory. Population, 1,689.

The Richelieu and Ontario Navigation Company, has a small wharf at Verchères, but it being private property and inadequate for the requirements of the traffic, specially for the large shipments of hay, it was decided to build a public wharf.

The wharf consists of a head block of pilework 96 feet 6 inches long, by a width of 40 feet 4 inches, a pilework approach on a length of 224 feet by a width of 20 feet, and a stone embankment 300 feet long, by a width of 20 feet at the top with slopes of 1 in 1 on both sides.

The work, carried out by day labour, was commenced in November, 1903. It was suspended during the winter and continued in May, 1904; it was well under way at the end of the fiscal year.

The expenditure on the work to June 30, 1904, was \$5,228.

## PROVINCE OF ONTARIO.

## BARRIE.

Barrie is situated in the county of Simcoe, 66 miles north-west from Toronto, on Kempenfeldt bay, Lake Simcoe, population 5,600.

At the session of parliament of 1903, the sum of \$3,000 was re-voted for the construction of a wharf at this place, and on August 5, the same year, orders were given to proceed with the work by day labour.

## 4-5 EDWARD VII., A. 1905

The work consists in building a pile trestle wharf at the foot of Bayfield street, 200 feet in length and 20 feet in width. Plans and specifications were prepared and work commenced on August 7, 1903, and completed on January 31, 1904.

In doing the above work, some 110 piles; 6,067 f.b.m. hemlock; 8,250 f.b.m. pine; 20,640 f.b.m. cedar were used.

Expenditure for fiscal year, 1903-04 :

Labour and superintendence. . . . .	\$1,515 01
Materials. . . . .	1,710 92
	<hr/>
	\$3,225 93

## BAYFIELD.

Bayfield, a village in the county of Huron, is situated at the mouth of the river of the same name, which empties into Lake Huron, 12 miles south of the town of Goderich. It contains one grist and saw-mill.

At the last session of parliament, the sum of \$5,000 was appropriated to complete the extension of the southern pier at this place, for which a contract was given to Mr. James Clark of Goderich, on November 27, 1901, for the sum of \$6,440, to construct the extension 120 feet in length and 30 feet wide, and to dredge berths for the cribs to 16 feet below low water.

Work was commenced in July, 1902, and the two cribs were placed in position in the fall of the same year, with the result that they were both, more or less, destroyed by the fall and winter storms. Operations were not commenced again until June last, 1903, and the work completed in December the same year.

Dredging to the extent of an expenditure of \$2,000 was ordered on August 6, 1903, to be performed by the Marlton Dredging Co.

Expenditure for fiscal year, 1903-4 :—

To paid James Clark, amount of contract, \$6,440, less	
one foot in height, not constructed . . . . .	\$6,756.70
To paid, inspection. . . . .	380.00
	<hr/>
	\$9,136.70

## BLIND RIVER.

Blind River is a village situated on the north channel, Lake Huron, in the district of Algoma. It is a station on the Canadian Pacific Railway. Extensive lumbering operations are carried on at this place.

At the session of parliament of 1903, the sum of \$9,000 was appropriated to pay balance of contract for the construction of a wharf at this place, which contract was let to Mr. Robert Grant on February 11, 1903, and completed on August 13, the same year.

On November 10, 1903, the sum of \$3,000 was authorized for the construction of a headblock, 100 feet by 30 feet, by day labour, which was completed in April, 1904.

Expenditure for fiscal year 1903-04:—

Labour and superintendence. . . . .	\$1,211 19
Materials. . . . .	1,696 50.
	<hr/>
	\$2,907 69

To paid, Robert Grant, balance of contract. . . . . \$4,510 73



## SESSIONAL PAPER No. 19

## BOWMANVILLE.

Bowmanville, or Port Darlington, is situated on the north shore of Lake Ontario, county of Durham, forty-three miles from Toronto by rail on the Grand Trunk division of the main line between Toronto and Montreal. Population, 3,500.

At the session of parliament of 1903, the sum of \$1,000 was appropriated to complete repairs to the breakwater at this place, and on August 5, the same year, authority was given to expend the amount by day labour.

Work was commenced on August 19, and completed on September 28, and consisted in filling in the breakwater with stone ballast, and repairing the main pier.

In doing the above work, some 12,250 f.b.m. pine, 10,610 f.b.m. 3-inch pine plank, 25½ toise of stone and 500 pounds iron were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$ 257 49
Materials. . . . .	742 51
	<hr/>
	\$1,000 00

## BRACEBRIDGE.

Bracebridge is situated on the north branch of the Muskoka river, county of Victoria, 125 miles north of Toronto. Population, 2,000.

At the session of parliament of 1903, the sum of \$5,800, was appropriated for the construction of a wharf at this place, and orders were issued on November 26 last, to prepare contract plans and specifications for same, but owing to a change in location, this work has been delayed.

## BRONTE.

Bronte is situated in the county of Halton, on the north shore of Lake Ontario, 27 miles south-east of Toronto.

At the session of parliament of 1903, the sum of \$2,700 and \$6,300 was appropriated for harbour improvements at this place, and on August 5, authority was given to expend the sum of \$1,500, and on November 9, authority was given to expend \$6,300 by day labour.

The work consists in the construction of 150 lineal feet of pilework, and two cribs, 50 x 24 x 13 feet, and renewing the superstructure 110 feet in length by 24 feet in width, the raising of the superstructure one foot in height for a distance of 40 feet, and placing a life chain, 450 feet in length, in position.

In doing the above work, some 77,881 f.b.m. hemlock; 50,710 f.b.m. pine; 7,760 f.b.m. elm; 110 cedar piles and 3,247 lbs. iron were used.

Expenditure for fiscal year, 1903-4 :—

Labour and superintendence. . . . .	\$1,316 09
Materials. . . . .	4,823 19
	<hr/>
	\$6,139 28

## BURK'S FALLS.

Burk's Falls is situated in the district of Parry Sound, on the Magnetawan river, and is a station on the Grand Trunk Railway, Northern Division. Population, 1,500.

At the session of parliament of 1903, the sum of \$4,000 was appropriated to settle with Mr. David Conroy, who contracted on January 2, 1903, to build a wharf at this place, of pile trestle work, 300 feet in length, and 25 feet wide for the sum of \$5,400, and for which the sum of \$4,500 had been appropriated in 1902-3. The structure was completed on August 11 last.

4-5 EDWARD VII., A. 1905

Expenditure for fiscal year, 1903-4 :—

To paid Mr. Conroy, balance of contract. . . . . \$900

Mr. Conroy was paid on progress estimates before June 13, 1903, \$4,500.

Authority was given to erect a warehouse, and the work was performed by the Magnetawan Tanning and Electric Co., for the lump sum of \$500. This work was completed June 24.

Expenditure during the fiscal year 1903-04, \$1,780.75.

#### BURLINGTON CHANNEL.

Burlington channel in the county of Wentworth, is simply a cut through a piece of low land which partly separates Lake Ontario from a large sheet of water called Burlington bay, enabling vessels to reach the wharf at the city of Hamilton. Both sides of the channel are lined with piers.

At the session of parliament of 1903, the sum of \$60,000 was appropriated to complete the repairs and the work of renewal of the superstructure at this place.

On October 19, 1901, a contract was let to Mr. James Clark, of Goderich, for \$96,700 to reconstruct the superstructure of the west end of the south pier, and to protect the channel sides of both piers with sheet piling. The time for completion was extended to December 30, 1903 and again to July, 1904.

A dredge was employed from September 15 to November 14, removing stones obstructing the driving of the piling, and day labour was also employed to place the stone behind the sheet piling.

Up to June 30, 1904, 5,140 feet (lineal) of sheet piling has been driven, and 996 lineal feet of superstructure has been rebuilt.

The swing bridge staff were employed from July 1 to December 19, when the lights were put out, and navigation ceased for the winter, opening again on March 1, 1904, when they resumed duty.

Expenditure for fiscal year, 1903-04 :—

To paid James Clark, progress estimates. . . . .	\$52,773 82
“ Assistant Engineer and Inspector, (wages &c.) . . . . .	2,978 66
“ wages of working staff on bridge. . . . .	1,702 00
“ maintenance of bridge and supplies. . . . .	1,445 65
	<hr/>
	\$58,300 13

#### CHRISTIAN ISLAND.

Christian island is situated in Georgian bay, county of Simcoe, and is distant from Pentanguishene, the nearest railway point, about twenty-six miles. The inhabitants are chiefly Indians, as this is an Indian reserve. Cordwood exportation and fishing are the chief industries.

At the session of parliament of 1903, the sum of \$400 was appropriated for repairs to the wharf on the Indian reserve at this place, and on November 9, the same year, instructions were given to proceed with the work of repairs to the present structure built by the Indian Department. Work commenced on February 13, and was completed on May 6, 1904.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$359 50
Materials. . . . .	40 50
	<hr/>
	\$400 00

## SESSIONAL PAPER No. 19

## COBOURG.

Cobourg is an incorporated town, in Northumberland county, situated on the north shore of Lake Ontario, on the Grand Trunk Railway, ninety-two miles west by south of Kingston, sixty-nine miles north-east of Toronto, and is a port of entry. It has several mills, foundries, breweries and a car factory. Population, 4,239.

At the session of parliament of 1903, the sum of \$2,500 was appropriated for repairs to piers and dredging at this place, and on August 5, the same year, authority was given to expend the amount by day labour.

Work was commenced on August 14, and consisted in replanking the 'Langevin' pier, a length of 450 feet, 29 feet wide; renewing 150 feet of the east pier with stringers and planking 16 feet wide; the north-east corner of the east pier rebuilt from low water up, 100 feet in length, and 12 feet wide, and filled with stone, also repairing under the Customs warehouse with cross timbers and flooring.

In doing the above work, some 50,971 feet board measure pine; 27,550 feet board measure pine plank; 83,246 feet board measure cedar and 6,485 pounds iron were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence . . . . .	\$1,184 50
Materials . . . . .	3,515 49
	<hr/>
	\$4,999 99
	<hr/>

## COLLINGWOOD.

Collingwood is situated on the south side of the Georgian bay, township of Nottawasaga, county of Simcoe, ninety-four miles by railway from Toronto. It is the terminus of the Northern and Hamilton and North-western Railways. There is an extensive trade in ship-building, grain and lumber, and it is the starting point of steamers for Owen Sound, Sault Ste. Marie, Parry Sound, &c. Population, 9,000.

As constituted now, the harbour is very large and commodious, being protected on the north and east sides by extensive breakwaters. Several small wharfs belonging to the town, or to companies, are built inside the area inclosed by these breakwaters.

At the session of parliament of 1903, the sum of \$60,000 was appropriated for improvement in Collingwood harbour, and on September 14, the same year an agreement was entered into with Mr. C. S. Boone, to increase the width of the channel to 220 feet through the harbour, with an entrance at lake end of 300 feet, and to give a depth throughout of 20 feet at low water, to be paid for at the following rates (in situ) viz.: mud, 35 cents; hard pan, \$1.40; rock, \$2.30 per cubic yard. The agreement to be considered as a continuation of the work Mr. Boone had already performed, under contract in the harbour.

Work was commenced August 24, 1903, operations being suspended for the winter on December 5, up to which date the plant had removed, on continuation agreement, 12,403 cubic yards mud; 6,825 cubic yards hard pan and 500 cubic yards of rock. Work recommenced on May 4, and up to June 30, 1904, worked 528½ hours removing 4,001 cubic yards, and 10,621 cubic yards hard pan.

Expenditure for fiscal year, 1903-04 :—

Paid C. S. Boone, on dredging (continuation agreement)	\$54,542 10
“ “ work in front of dry dock . . . . .	10,245 60
“ inspection . . . . .	623 95
	<hr/>
	\$65,411 65

4-5 EDWARD VII., A. 1905

## DEPOT HARBOUR.

Depot Harbour, is situated on the north-east shore of Georgian bay, in the district of Muskoka, 60 miles north of Collingwood, and about 3 miles by water from Parry Sound. It is the western terminus of the Canada Atlantic Railway system, and was selected by this railway company as a point of transshipment of the grain from the west ; it is distant from Ottawa, 263 miles by rail. In connection with this harbour the railway company operates between Chicago, Milwaukee, Duluth and Depot Harbour a fleet of large steel steamers of 4,000 to 7,000 tons each, which make return trips every week. It is a splendid natural harbour, three-eighths of a mile in width, deep enough to accommodate the largest steamers on the lakes ; the entrance is sheltered by Supply island which lies about one mile to the westward.

The Canada Atlantic Railway Company has built two wharfs, one on each side of the harbour, of a total length of 3,000 feet with 22 feet of water at the face ; an elevator of 1,250,000 bushels capacity ; two freight sheds, each 700 feet long and 90 feet wide, with double tracks in the rear.

In 1900, the railway company applied for aid, to the amount of \$200,000, towards the construction of further harbour improvements required for the increasing traffic of the harbour.

In May, 1902, a contract was awarded to Messrs. Davis, Haney & Miller for the construction of an additional length of 1,250 feet to the elevator dock on the northern side of the harbour, towards Supply island, the contract price being \$195,000.

During the fiscal year 1902-03, at the request of the Canada Atlantic Railway Company, the general lines of the works were changed, instead of building the extension 1,250 feet long and 60 feet wide, it was decided to build it 525 feet long and 80 feet wide, and to construct a landing wharf, 400 feet long and 150 feet wide, at the inner end of the harbour.

These changes were accepted by the contractors at the original contract price. At the end of the fiscal year 1902-03, construction had not been commenced.

The extension consists of close-faced timber cribwork walls on the sides and outer end, with stone filling between and of an average height of 33 feet, to 7 feet above extreme low water, the cribs rest on an artificial stone foundation. The top is finished with broken stone in the middle and on the sides and outer end, for a width of 8 feet, it is planked over with 3-inch deals.

The landing pier, 400 feet long, consists of two lines of close-faced timber cribs sunk at a distance of 150 feet between their outer faces, and one crib at the outer end closes the space between the side cribs, the top of the crib standing one foot below low water, they are to be filled with stone and between them the filling is to consist of sand. The superstructure is to be built continuously to a height of 7 feet above low water.

At the end of the fiscal year 1903-04, the extension to the elevator wharf was nearly completed, and all the cribs of the landing pier, but one, were sunk and partly filled.

In February, 1904, the contractors agreed to build the superstructure of the landing pier with concrete instead of timber, without any increase in the contract price. The amount expended during the fiscal year 1903-04, was \$106,134.11.

## GODERICH.

Goderich, in the county of Huron, is situated on the east shore of Lake Huron, at the mouth of the River Maitland about sixty-eight miles from Sarnia, and sixty miles from London.

It is the terminus of the Buffalo branch of the Grand Trunk Railway, and a place of considerable importance.

## SESSIONAL PAPER No. 19

At the session of parliament of 1903, the sum of \$20,000 was appropriated towards the construction of a breakwater off the entrance of the harbour at this place. Plans and specifications were prepared, and tenders are now being called for.

Soundings and borings were taken for the proposed breakwater, for which the following amounts were expended.

Expenditure for the fiscal year, 1903-04, \$18,817.73.

## GORE'S LANDING.

Gore's Landing is a small village of some 100 inhabitants, and is situated in the County of Northumberland, on the south shore of Rice lake, twelve miles from Cobourg.

At the session of parliament of 1903, the sum of \$3,000 was appropriated for the construction of a wharf at this place, and on October 30, the same year, authority was given to do the work by day labour.

The work consisted in the construction of a pile wharf, 190 feet long with an 'L' end of 73 feet, the width varying from 70 feet at the shore end to 28½ feet at the outer end. The whole interior of the structure being filled with stone.

In doing the above work, some 423 oak piles; 108 cords of stone, 2,390 feet board measure 3-inch pine plank, 960 f.b.m. pine and 4,335 pounds iron were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence. . . . .	\$1,791 56
Materials. . . . .	1,140 49
	<hr/>
	\$2,932 05

## GRAND BEND.

Grand Bend is a village on the east shore of Lake Huron, about forty miles south of Goderich.

At the session of parliament of 1903, the sum of \$5,000 was appropriated for the construction of a breakwater pier and dredging a channel at this place, and on November 12, the same year, orders were given to prepare contract plans and specifications.

A contract was let to Mr. John D. Warwick, on March 26, 1904, for the sum of \$21,388, for the construction of the wharf.

Expenditure during fiscal year 1903-04, \$298.64.

## GRAND RIVER.

Dunnville is a town on the Grand river, in the county of Haldimand, five miles from Lake Erie.

On July 13, 1903, authority was given to engage the plant of Mr. C. S. Boone, to do the necessary dredging of the bar at the entrance to the Grand river, and also in the river at Dunnville, the terms being \$12 per hour, removing 80 cubic yards per hour, and to June 30, the plant removed 130,252 cubic yards.

Expenditure for fiscal year, 1903-04 :—

To paid C. S. Boone, dredging. . . . .	\$ 9,634 00
" towage from Sarnia. . . . .	533 00
" inspection. . . . .	470 40
	<hr/>
	\$ 10,631 40

4-5 EDWARD VII., A. 1905

## GRAND RIVER BRIDGE.

Grand River bridge is situated at the village of York, in the county of Haldimand, five miles from Caledonia, the nearest railway point.

On May 28, 1903, authority was given to expend the sum of \$150 in making repairs to the embankment approaches to the bridge at this place, and the necessary work was done in August last, and consisted in repairing the washout of the embankment, caused by the heavy rains in the spring.

In doing the above work some eighteen cords of stone, 97 cubic yards of gravel and 327 lineal feet of 3-inch pine plank were used.

Expenditure for fiscal year, 1903-04 :—

To paid, repairs. . . . .	\$ 173 34
“ caretaker (one year's salary) . . . . .	25 00
	<hr/>
	\$ 198 34

## HAILEYBURY.

Haileybury, a post village in Nipissing county, is situated on the west shore of Lake Temiscamingue, near the entrance into Wabi bay.

In the fiscal year 1900-01 the building of a wharf was commenced to accommodate the local trade.

No work was done on this structure during the fiscal year 1901-02.

During the fiscal year 1902-03, work on the wharf was commenced and some progress made with the construction of the approach.

During the fiscal year 1903-04 a close-pile head 40 x 60 feet dimensions with stone filling was built to a height of 7 feet above low water level, incorporating a smaller crib 20 x 30 feet dimensions, which had been sunk in 10 feet of water at an earlier date.

The stone approach which is 500 feet long and 18 feet wide on top was added to materially, but was not completed to its full height.

Expenditure for fiscal year 1903-04, \$8,842.18.

Total expenditure to June 20, 1904 is \$13,370.43.

## HAWKESTONE.

Hawkestone is a small village on the north shore of Lake Simcoe, distant fifteen miles north-east of Barrie.

Authority was given on January 15, 1904, to expend the sum of \$200 in repairs to the pier at this place. Work commenced on April 5, and consisted in repairing the decking of wharf.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$ 151 50
Materials. . . . .	33 36
	<hr/>
	\$ 184 86.

## HIAWATHA.

Hiawatha is the name of the Indian village on the Mississaga Indian reservation, in the township of Otonabee, about 12 miles south of Peterborough, and 15 miles north of Cobourg.

On December 29, 1903, orders were given to expend the sum of \$300 to remove the stone from the old pier at Hiawatha, and \$1,200 to construct a landing pier, by day labour.

The work consists of a timber wharf made up of cribs and spaces, there being three cribs, 16 x 20 feet, giving a total length of 84 feet. A road approach to the wharf was constructed 84 feet in length, 20 feet in width and 6 feet deep.

## SESSIONAL PAPER No. 19

In doing the above work, some 12,192 feet board measure pine, 2,500 feet board measure hemlock, and 833 pounds iron were used.

Total expenditure for fiscal year 1903-04 :—

Labour and superintendence . . . . .	\$ 876 85
Materials . . . . .	151 65
	<hr/>
	\$1,038 50

## HILTON.

Hilton is a small village situated on St. Joseph's island, on the north channel of Georgian bay.

On August 13, 1903, authority was given to expend the sum of \$40 in repairs to the wharf at this place.

In doing the above work, some 3,325 feet board measure pine plank were used.

Expenditure for fiscal year 1903-04 : Materials, \$39.90.

## HONORA.

Honora is a village on the east shore of Manitoulin island, district of Algoma, and is distant about twenty miles from Little Current.

At the session of parliament of 1903, the sum of \$4,000 was appropriated for the construction of a wharf at this place, and on November 12 last, instructions were given to prepare contract plans and specifications, which was done and tenders called for.

The contract was let to Messrs. D. Porter and G. Kastner, on February 22, 1904, for \$7,900.

## KINCARDINE.

Kincardine, in the county of Huron, is situated at the mouth of the Penetangore river, which empties into Lake Huron, 31 miles south of Southampton. It is the terminus of the Wellington, Grey and Bruce division of the Grand Trunk Railway. Extensive salt deposits are found here.

At the session of parliament of 1903, the sum of \$3,000 was appropriated for repairs to the piers and dredging at this place, and on July 18 last, orders were given to employ the Marlton Dredging Company's plant of Goderich to do what was required. Operations were commenced on September 22, 1903, and continued until November 4, during which time the plant worked 225½ hours, and removed 17,460 cubic yards.

On July 13, 1903, instructions were given to make the necessary repairs to the piers by day labour.

In doing the above work, some 950 feet board measure oak and 5,000 feet board measure hemlock plank were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence . . . . .	\$ 634 16
Materials . . . . .	363 99
	<hr/>
	\$ 998 15
	<hr/>
To paid Marlton Dredging Co. . . . .	\$1,804 00
“ “ “ towage . . . . .	142 00
“ inspection . . . . .	144 00
	<hr/>
	3,088 15



4-5 EDWARD VII., A. 1905

## KINGSVILLE.

Kingsville, county of Essex, on the north shore of Lake Erie, about 25 miles east of the mouth of the Detroit river, on the Essex and Lake Erie Railway. Population, 1,600.

At the session of parliament of 1903, the sum of \$4,000 was appropriated for filling the superstructure of the extension of the breakwater with stone ballast, and on November 9, 1903, orders were given to do the stone filling by day labour, with the expenditure of \$1,000 and the balance being for the required dredging, and, as no plant was available, the dredging was not performed.

In doing the above work, some 72 cords of stone were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$652 61
Materials. . . . .	346 35
	<hr/>
	\$998 96

## LAKEPORT.

Lakeport, the port of Colborne, is situated in the west riding of the county of Northumberland, 14 miles east of Cobourg.

At the session of parliament of 1903, the sum of \$3,500 was appropriated for repairs to the wharf at this place, and on October 30, the same year, authority was given to proceed with the work by day labour.

In doing the above work, some 14,338 feet board measure pine plank ; 1,236 feet board measure hemlock ; 50 feet board measure oak ; 53,492 feet board measure cedar ; 24 cords stone, and 8,237 pounds, iron were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$ 963 24
Materials. . . . .	2,061 73
	<hr/>
	\$3,024 97

## LANCASTER.

Lancaster, a post village in Glengarry county, on the River St. Lawrence, sixteen miles east of Cornwall and on the Grand Trunk Railway, fifty-four miles west of Montreal. Lancaster is a landing place of the Cornwall and Montreal steamers, and contains four churches, three hotels, fifteen stores, one iron foundry, one saw-mill, telegraph and telephone agencies and one printing office issuing a weekly newspaper. Population, 583.

During the month of October, 1903, the sum of \$98.83 was expended to effectuate repairs to the stone approach of the public wharf at that place.

## LEAMINGTON.

Leamington, is a village in the county of Essex, on Lake Erie, thirty-seven miles from Windsor.

At the session of parliament of 1903, the sum of \$3,800 was appropriated for protection sheet piling, &c., to the wharf at this place. Orders were given on November 9, to proceed with the work by day labour.

In doing the above work, some 47,772 feet board measure pine, 75 feet board measure oak, and 9,929 pounds iron were used.

## SESSIONAL PAPER No. 19

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$2,368 40
Materials. . . . .	1,365 25
	<hr/>
	\$3,733 65

## LITTLE BEAR CREEK.

Little Bear Creek is in the counties of Kent and Bothwell, and empties into the 'Chenal Ecarte,' Lake St. Clair, about sixteen miles from Chatham.

At the session of parliament of 1903, the sum of \$2,000 was appropriated for dredging at this place, and on October 14 last, orders were given to employ the Chatham Dredging Company's plant to do the work required.

The work consisted in giving a depth of 7½ feet through the navigable portion of the creek; about half mile of dredging was done, and some 21,600 cubic yards of material were removed. The plant worked from November 4 to December 1, 1903, and from April 7 to April 12, 1904.

Expenditure for fiscal year, 1903-04 :—

To paid Chatham Dredging Co. . . . .	\$1,720 00
“ inspection. . . . .	90 00
	<hr/>
	\$1,810 00

## L'ORIGINAL.

L'Original, the chef-lieu of the county of Prescott, on the south shore of the Ottawa river, and sixty-six miles west of Montreal. It contains, besides the county buildings, four churches, Roman Catholic, Presbyterian, Episcopalian and Methodist, telegraph office, several insurance agencies, grist and saw-mills, five stores and two hotels. Two weekly newspapers are published in L'Original. Population, 1,026.

The public wharf at L'Original, rebuilt in 1898 to 1900 at a cost of \$28,294.60, is one of the most important on the River Ottawa.

During April, 1904, the floor of the trestle approach, 700 feet long, has been redoubled with 3-inch pine planks, the roof of the freight shed has been repaired and the stone embankment 623 feet long, has been repaired and regavelled.

The work was carried out by day labour at a cost of \$974.52.

## McCRACKEN'S LANDING.

McCrackens' Landing is situated on the south shore of Stony lake, in the county of Peterborough, and is distant twelve miles north-easterly from Lakefield on the Trent Valley system.

On December 20, 1903, orders were given to construct a wharf at this place by day labour, the sum of \$900 being authorized for same.

The work consists in the construction of a new crib wharf 30 feet square, nine feet in depth, planked on top, sheeted all round with 2-inch hemlock planks and filled with stone.

An approach leading to this wharf, 72 feet long, with an average depth of 4 feet and 20 feet wide on top, was also built.

In doing the above work, some 9,292 feet board measure hemlock, 3,456 feet board measure, cedar, 69¾ cords stone and 541 pounds iron were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence. . . . .	\$379 50
Materials. . . . .	411 22
	<hr/>
	\$790 72

MCGREGOR'S CREEK.

McGregor's Creek, situated in the county of Kent, is a branch of the Thames river at Chatham.

At the session of parliament of 1903, the sum of \$4,500 was appropriated for new sheet pile protection work and repairs to the old work at this place, and orders were issued on August 5, to proceed with the work.

An agreement was entered into with Mr. John Flook, on September 28, 1903, to provide and place piles 30 feet long, with anchor piles and waling complete, for \$17 per lineal foot, 260 feet 6 inches lineal feet of pile-work was driven.

Expenditure for fiscal year, 1903-04 :—

To paid John Flook, as per agreement. . . . .	\$1,428 50
“ inspection. . . . .	107 50
	<hr/>
	\$4,536 00

MEAFORD.

Meaford is an incorporated town in the county of Grey, on the west side of Georgian bay, eighteen miles west of Collingwood, and twenty miles to the eastward of Owen Sound. It is the terminus of the northern division of the Grand Trunk Railway. Population, 2,500.

At the session of parliament of 1903, the sum of \$20,000 was appropriated for the construction of a breakwater at the entrance to the harbour at this place ; plans and specifications for this work have been prepared and tenders called for.

The sum of \$2,000 was also appropriated to complete repairs to the piers. The work consists in rebuilding some 300 feet in length of the superstructure of the east pier, from low water level; placing iron plates on the corners of the west pier, &c. Work was commenced on July 14, 1903, and was completed on June 27, 1904.

In doing the above work, some 17,564 feet board measure pine, 12,500 feet board measure cedar and 79 cubic yards of stone were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence. . . . .	\$1,251 38
Materials. . . . .	1,053 15
	<hr/>
	\$2,304 53

MIDLAND.

Midland, Simcoe county, is at the terminus of the Midland division of the Grand Trunk Railway, on Georgian bay. Population, 3,500.

Large quantities of lumber are shipped to and from this harbour, and the railway company has two large grain elevators at this place. During the past two years the Canadian Iron and Furnace Company has erected large smelting works.

At the session of parliament of 1903, the sum of \$12,000 was appropriated for dredging at this place, and the 'Owen Sound Dredge & Construction Co.' re-commenced work on June 29, 1903, and removed 79,982 cubic yards of material consisting of boulders and hard clay.

On November 2, 1903, a contract was let to Mr. A. A. McDonald, of Hamilton, for the sum of \$19,492, to construct two pile wharfs, each 300 feet in length, for which an appropriation of \$10,000 has been made. Work was commenced during the winter, fair progress being made.

## SESSIONAL PAPER No. 19

Expenditure for fiscal year 1903-04, \$26,012.16.

To paid Owen Sound Dredging Co., over-expenditure, 1902-03..	\$16,700 00
To paid Owen Sound Dredging Co., from June 29, 1903 to June 30, 1904....	18,035 00
To paid inspection.....	638 45
	<hr/>
	\$35,375 45
To paid A. A. McDonald, progress estimate.....	4,320 00
“ inspection.....	102 00
	<hr/>
	\$4,422 00

## MONETVILLE.

Monetville, a new post town, is situated on West bay, Lake Nipissing, about thirty-five miles south-west of Sturgeon Falls, Ont.

In the fall of 1903, a wharf 40 feet in length, with a freight shed, was built to accommodate local traffic.

Expenditure for fiscal year 1903-04, \$578.17.

## MORPETH.

Morpeth is a village in the county of Kent, on Lake Erie, fifteen miles from Thamesville, and thirty-two miles from Chatham.

On October 30 last, authority was given to expend the sum of \$200 in executing absolutely necessary repairs to the pier at this place, by day labour.

In doing the above work, some 7,036 feet board measure hemlock and 150 pounds of iron were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence.....	\$ 62 00
Materials.....	137 81
	<hr/>
	\$199 81

## MOUNT JULIEN.

Mount Julien is situated in the township of Burleigh, county of Peterborough, on the north shore of Stony lake, and is distant 15 miles from Lakefield, of the Trent Valley Canal system.

On May 20 last, orders were given to repair the wharf at this place, same to be charged against Hiawatha.

In doing the above work, some 1,000 feet board measure tamarack, 700 feet board measure hemlock ; 52 feet board measure pine and 65 yards of gravel were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence.....	\$147 12
Materials.....	92 65
	<hr/>
	\$239 77

## NEWCASTLE.

Newcastle is situated in the county of Durham, on the north side of Lake Ontario, 47 miles east from Toronto. It contains large woollen mills, a tannery and implement factory. Population about 1,000.

At the session of parliament of 1903, the sum of \$8,000 was appropriated to complete repairs to the pier at this place. Work was commenced by day labour on August

4-5 EDWARD VII., A. 1905

10, 1903, and consisted in rebuilding the superstructure of the south end of the east or landing pier, 210 feet in length, 16 feet wide, and 160 feet in length, 36 feet wide, also 80 feet in length, 40 feet wide, of the north end of the same structure.

In doing the above work, some 171,329 feet board measure pine ; 7,035 pounds iron and 72 toise of stone were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$1,948 28
Materials. . . . .	6,051 32
	<hr/>
	\$7,999 60

## OAKVILLE.

Oakville is situated on the north shore of Lake Ontario, in the county of Halton, 29 miles west of Toronto. Population about 1,700. It contains several mills and factories and a shipyard. The trade of the place is local. It is a station on the Hamilton branch of the Grand Trunk Railway.

At the session of parliament of 1903, the sum of \$6,000 was appropriated for repairs to the piers at this place, and on August 5 last, instructions were given and work commenced by day labour on August 22, 1903.

The work consisted in building two cribs and superstructure as headblock to the eastern pier ; one crib being 54 feet long, 24 feet wide and the other 78 feet long by 24 feet wide, giving a total length of 132 feet. Both of these cribs were placed in 16 feet depth of water. The moving of the lighthouse, and re-building the superstructure for a length of 50 feet and four feet in height.

In doing the above work, some 42,718 feet board measure, cedar and hemlock were used in cribwork, and 24,256 feet board measure, pine in the superstructure, also 6,253 pounds iron for bolts, 19½ toise of stone ballast and 5 white oak mooring posts.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$1,925 49
Materials. . . . .	4,074 51
	<hr/>
	\$6,000 00

## ORILLIA.

Orillia, in the county of Simcoe, is situated off Lake Couchiching, 89 miles north-west of Peterborough, and 23 miles north-east of Barrie. Population, 3,000.

At the session of parliament of 1903, the sum of \$7,000 was appropriated for the construction of a wharf at this place.

The work consists in building a structure 200 feet in length, with a width of 20 feet of cribwork substructure and concrete superstructure.

A contract was let to Messrs. Green & McKinnon, on January 12, 1903, to perform the work for \$8,389. Operations were commenced in April, 1903, and the structure was completed on October 30, the same year.

Expenditure for fiscal year 1903-04, \$6,634.67.

## OWEN SOUND.

Owen Sound is situated at the mouth of the Sydenham river, which flows into the head of Owen Sound, an arm of the Georgian bay, in the county of Grey.

## SESSIONAL PAPER No. 19

The town is the centre of an extensive agricultural district, and is the terminus of the Grand Trunk Railway branch of the Georgian Bay and Lake Erie division, also of the Canadian Pacific Railway—Toronto, Grey and Bruce division. There are several lines of steamers running to and from Owen Sound. Population, 9,500.

At the session of parliament of 1903, the sum of \$16,000 was appropriated for dredging and pile protection work at this place.

The contract with A. F. Bowman for deepening and dredging on the west side of the harbour at the entrance, for a bulk sum of \$24,210, was completed on October 17, 1903.

Orders were issued on August 5, 1903, to remove obstructions, and Mr. Bowman's dredging plant was employed for the purpose, and removed 40,375 cubic yards.

Instructions were given on December 5, 1903, to put in extra anchor piles behind the new sheet piling on the west side of the harbour, and 100 piles were driven.

Expenditure for fiscal year 1903-04, \$15,984.85.

## PELEE ISLAND.

Pelee Island is situated on the western end of Lake Erie, in Lat. 40° 46' N., Long. 28° 45' W., about 35 miles south-east from the mouth of the Detroit river, and 16 miles south of the town of Kingsville, Essex county. Population of the island about 600. The products of the island are grapes, wine, fruit and farm produce.

At the session of parliament, of 1903, the sum of \$1,200 was appropriated to complete payment to Messrs. A. M. McCormick & Son, to whom a contract had been let on December 15, 1902, to build an extension at the outer end of the wharf at this place, 50 feet long and 40 feet wide, for the sum of \$3,500. Authority was also given to build a warehouse on the wharf. The extension was completed in August, 1903, and warehouse in September, the same year. A bonded wareroom was constructed in the warehouse in February.

Expenditure for fiscal year 1903-04 :—

To paid, McCormick & Son, final estimate . . . . .	\$1,300 00
“ Jos. Ley, building warehouse . . . . .	369 00
“ “ cornice on warehouse . . . . .	31 00
“ “ bonded wareroom in warehouse . . . .	80 00
“ “ inspection . . . . .	138 00
	<hr/>
	\$1,918 00

## PENETANGUISHENE.

Penetanguishene, in the county of Simcoe, is situated on the north-eastern peninsula in Georgian bay, formed between Nottawasaga bay and the water of the Severn river, forty miles north-west of the town of Barrie. It is the terminus of the branches of the Grand Trunk Railway, and a large quantity of lumber is shipped thence from the north and east shores of the Georgian bay.

At the session of parliament of 1903, the sum of \$7,000 was appropriated for dredging at this place, to continue the agreement with Messrs. Bowman & Co., to do the work required. Work was re-commenced on June 29, 1903, and operation ceased on November 24, and was resumed on June 6, 1904.

From June 29, 1903, to June 30, 1904, 56,720 cubic yards of material were removed.

4-5 EDWARD VII., A. 1905

Expenditure for fiscal year 1903-04 :—

Paid Bowman & Co. . . . .	\$7,214 00
“ inspection . . . . .	472 94
	<hr/>
	\$7,696 90

## PICKERING.

Pickering harbour, formerly known as Frenchman's bay, is situated on Lake Ontario, twenty-one miles east of Toronto.

At the session of parliament of 1903, the sum of \$2,500 was appropriated for repairs to piers and dredging at this place, and on August 5, the same year, authority was given to expend the sum of \$500 to complete the repairs to piers by day labour.

The work consisted chiefly in repairing the breakwater, which extends from north end of west pier to the beach, 120 feet in length of this structure has been rebuilt from low water up.

In doing the above work, some 270 feet board measure 2-inch pine, 1,947 feet board measure hemlock, 1,703 feet board measure pine and 367 pounds iron were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence . . . . .	\$403 80
Materials . . . . .	96 20
	<hr/>
	\$500 00

## POINT AU BARIL.

Point au Baril is a village of some 100 inhabitants, and is situated on the east shore of Georgian bay, forty miles north-west of Parry Sound, the nearest railway point. Fishing is the chief industry of the place.

At the session of parliament of 1903, the sum of \$3,000 was authorized for the removal of obstructions in the channel from Parry Sound to Killarney, at Point au Baril and the Devil's Elbow, and on August 10, authority was given to have this work done.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence . . . . .	\$ 485 25
Materials, dynamite, tools, &c. . . . .	867 32
	<hr/>
	\$1,352 57

## POINT EDWARD.

Point Edward, Sarnia, is situated in the county of Lambton, near the head of the St. Clair river, 61 miles west of London.

At the session of parliament of 1903, the sum of \$10,000 was appropriated for dredging at this place, and on July 2, the same year, orders were given to continue the employment of the plant belonging to Messrs. Muir Bros. & O'Sullivan, and the Sarnia Bay Towing & Salvage Co., to do the work required, at the rate of \$12 per hour removing 800 cubic yards per day of 10 hours.

From July 1 to September 15, 1903, Muir Bros. & O'Sullivan's plant worked 548 hours and removed 38,950 cubic yards of material at a cost of \$6,576.

From June 17, to November 14, the Sarnia Bay Towing & Salvage Co.'s plant worked 1,188 hours and removed 91,800 cubic yards of material at a cost of \$14,256, and from May 23 to June 30, 1904, the Sarnia Bay Towing & Salvage Co.'s plant worked 336 hours, removing 29,160 cubic yards.



## SESSIONAL PAPER No. 19

## Expenditure for fiscal year 1903-04 :—

To paid, Muir Bros. & O'Sullivan . . . . .	\$6,576 00
“ Sarnia Bay Towing & Salvage Co. . . . .	14,256 00
“ inspection . . . . .	751 10
	<hr/>
	\$21,583 10

## PORT ARTHUR.

Port Arthur is situated on Thunder bay, Lake Superior, in Thunder Bay district. It is the terminal of the Canadian Northern Railway. Population about 2,000.

At the session of parliament of 1903, the sum of \$17,500 was appropriated for repairs to the breakwater at this place, and on November 9, authority was given to proceed with the work by day labour.

In doing the above work, some 337,064 feet board measure, pine ; 11,674 pounds iron and 435 cords of stone were used.

## Expenditure for fiscal year 1903-04 :—

Labour and superintendence . . . . .	\$ 3,462 87
Material . . . . .	10,539 77
	<hr/>
	\$14,002 64

## PORT BURWELL.

Port Burwell is situated on the north shore of Lake Erie, in the county of Elgin. It is about 85 miles west from Port Colborne, at the Lake Erie entrance of the Welland canal, and 20 miles east of Port Stanley. This harbour is the terminus on Lake Erie of the Tilsonburg, Lake Erie and Pacific Railway, which extends inland as far as Ingersoll, where it connects with the Canadian Pacific Railway.

Previous to 1896, the harbour at Port Burwell was only a local harbour used by fishermen and small trading schooners. At that time, improvements on a large scale were commenced to enable the Tilsonburg, Lake Erie and Pacific Railway to deliver coal taken at United States posts on Lake Erie, to the industrial towns of centre Ontario, such as Ingersoll, Tilsonburg, Woodstock, Guelph, Brantford and others, and it was expected that 600,000 tons at least, would be imported that way annually at a saving of from 45 cents to 50 cents per ton to the consumers.

The harbour is situated at the mouth of Otter creek and is formed by two lines of works, running almost north and south ; the east line being 2,413 feet in length, the west line 2,855 feet in length, extending into Lake Erie, a distance of about 1,200 feet, the balance being along the banks of the creek.

Commencing out in the lake, the east line of works is composed of 550 feet of cribwork 30 feet in width, inclusive of a headblock or return to the east 50 by 24 feet ; followed by a length of 700 feet of cribwork 20 feet in width ; then by 120 feet of cribwork 18 feet wide ; the whole of this cribwork being sunk in 22 feet of water at low water, and standing 6 feet above low water. Then follow 893 feet of piling ; the main piles being 35 feet in length, the anchor piles 25 feet in length, with two rows of sheet-piles, one inside the main piles 20 feet in length, the other, outside the main piles 22 feet in length. The main piles being driven to a depth of 29 feet below low water level, and the top of the work being 6 feet above low water level.

Next to this piling, there is a length of 150 feet of combined cribwork and piling, the cribwork being 12 feet in width and 6 feet in height, resting on piles cut off level with the water, these piles being 24 feet in length. These 150 feet of work were done during the fiscal year 1903-04.

On the west side, commencing also in Lake Erie, the line of works is composed of 975 feet of cribwork 20 feet in width, inclusive of a return to the west 50 feet by 30 feet forming the head block ; the cribs being in 22 feet of water, and the

4-5 EDWARD VII., A. 1905

top of the work standing 6 feet above low water ; then follow 220 feet of cribwork 18 feet in length, in 11 feet of water only, but with close piling in front 28 feet in length, with anchor rods passing through the cribs into anchor piles driven on the west side of the cribs, the height of the work being also 6 feet above low water level. Next, comes a length of 1,050 feet of piling similar to the one described for the east side ; then a length of 610 feet of combined piling and cribwork ; 480 feet of which were built in 1903-04.

The width of the channel at the entrance between the two headblocks is 155 feet, narrowing to 130 feet at a distance of 500 feet ; then widening to 200 feet at a further distance of 400 feet, narrowing again to 185 feet at a further distance of 240 feet, then widening to a width of 350 feet at a further distance of 450 feet, then narrowing again to a width of 170 feet at a further distance of 600 feet. At that point the harbour may be said to end, and the creek to commence.

The whole of the area between the two lines of works was dredged to a depth of 20 feet previous to 1904, but early in the spring of 1904, a very strong freshet in the creek caused a considerable amount of silting, and soundings taken in April, 1904, show that the average depth of the harbour at that time was only 14 feet, while in the very centre of the harbour, the minimum depth was 7 feet.

Before the harbour of Port Burwell can be utilized, for the purpose for which these consequent improvements have been made, the creek will have to be diverted to the westward of the harbour, a breakwater constructed on the west side, and the east pier lengthened.

During the fiscal year 1903-04, the following work was done in the harbour of Port Burwell :—

1. 280 feet of superstructure was built up at the outer end of the eastern jetty, from low water to a height of 6 feet above low water, the width being 24 feet.

The work is of cribwork well put together, fully ballasted and planked over with 3-inch planks.

2. The protection work at the inner end of the harbour on the west side, was extended a further distance of 480 feet in a northerly direction.

This work was done as follows :—

A front row of close piling was driven, the piles being 10 x 12 inches dimension, and 24 feet in length. Then 12 feet back, piles of the same length and dimensions were driven 4 feet apart. All these piles were cut level with low water and cribwork 12 feet in width, well filled with brush and stone was built upon top of the piling to a height of 5 feet above low water, and planked over with 3-inch plank.

3. The inner end of the protection work on the east side of the harbour was completed over a distance of 150 feet, by building cribwork 12 feet wide, on the top of the piling driven during the fiscal year 1902-03.

A considerable amount of dredging was done in the harbour during the year 1903-04 at a further additional cost of \$31,243.15.

#### PORT COLBORNE.

At the close of the fiscal year 1902-03, the western breakwater under course of construction, at Port Colborne, Ontario, for the protection, against westerly storms, of the commercial docks built by the Department of Railways and Canals, was practically completed ; there remaining only two feet of superstructure to be built up on the inner 1,200 feet of the breakwater, and the placing of 1,400 cubic yards of large stones along the outer face of the structure. This work was satisfactorily completed in October, 1903, and the final estimate was given to the contractors on the 30th day of October, the total cost of the breakwater aggregating \$511,000.

The structure as completed consists of : 1. A headblock, 100 feet in length and 60 feet in width, on which the Department of Marine and Fisheries have erected a

## SESSIONAL PAPER No. 19

handsome lighthouse built entirely of concrete and iron. 2. Of 4,400 feet of crib-work ; the outer portion of which, 2,400 feet in length is 50 feet in width, and the remainder of it being in shallower water is only 25 feet in width.

During the autumn of 1903, the winter of 1903-04, and the spring of 1904, the timber superstructure was so severely tested by accumulations of ice, and by the force of the waves, it was decided to strengthen it very materially.

1. By building a concrete wall around the headblock, of an average thickness of 6 feet, and extending from a depth of 2 feet below low water to the top of the work, a height of 15 feet.

2. By substituting a concrete covering for the timber coveing originally specified, this covering varying in thickness from 1 to 1½ feet.

With this object in view, a contract was entered into with Mr. M. J. Hogan, as follows :—

1. For the concrete wall around the headblock, at the rate \$7.50 per cubic yard of concrete in place.

2. For the concrete slope replacing the wooden steps forming the 'break,' and for the concrete covering on the outer portion of the structure at the rate of \$8 per cubic yard of concrete in place.

3. For the concrete covering on the inner portion of the breakwater, at the rate of \$7 per cubic yard of concrete in place.

In the three cases, the price included the removal of all timber and stone in the way of the concrete work.

This work was started on April 13, 1904, the date of the signature of the contract, and was very satisfactorily completed at the close of the fiscal year, at a cost of \$38,075 divided as follows :

1. Concrete wall around headblock, 1,113 c. yds. at \$7.50. .	\$8,490 00
2. Concrete in slope and covering of outer portion of breakwater, 2,985 c. yds. at \$8. . . . .	23,880 00
3. Concrete on inner portion of breakwater, 815 c. yds. at \$7 . . . . .	5,705 00
	<hr/>
	\$38,075 00

During the winter of 1903-04, it was also decided to increase the quantity of large stones along the outside face of the breakwater, and in consequence, an arrangement was made with Mr. Hogan for the placing of 10,000 cubic yards of these stones at the rate of \$2.50 per cubic yard. This work was completed on June 30, the expenditure being \$25,000. Some very large stones, varying in size from 2 to 6 cubic yards, were obtained from a quarry 18 miles distant from the work, these very large stones forming a total of over 5,000 cubic yards out of the 10,000 cubic yards placed. This rip-rap is a great protection to the structure, and should be continued.

During the fiscal year 1903-04, plans and specification for the construction of a second breakwater on the east side of the harbour were prepared, tenders were called for, and the contract awarded to the lowest tenderer, Mr. M. J. Hogan, for the sum of \$179,000.

The contract was signed on June 8, 1904.

At the close of the fiscal year, no construction had been performed, but materials were being delivered.

The new or eastern breakwater is to be 600 feet to the eastward of the western breakwater. It will be 2,400 feet in length and 35 feet in width. The understructure to within 2 feet of ordinary low water mark being of timber cribwork, and the superstructure to a height of 11 feet above low water mark, being of concrete cribwork (Fraser's system).

The construction of this eastern breakwater will effectually protect the commercial docks from all easterly storms.

4-5 EDWARD VII., A. 1905

## PORT ELGIN.

Port Elgin is in the electoral division of the southern portion of the county of Bruce, on the eastern shore of Lake Huron, about 24 miles north of Kincardine, and 4 miles south of Southampton. It is a station of the Wellington, Grey and Bruce division of the Grand Trunk Railway. There is no track from the railway to the harbour. Population, 2,000.

At the session of parliament of 1903, the sum of \$4,000 was appropriated for dredging and repairs to the piers at this place, and on July 15, orders were issued to proceed with the work by day labour.

The work consisted in completing the filling with stone ballast of the extension to the breakwater, and repairing the landing pier superstructure, length of 200 feet, 20 feet wide.

In doing the above work, some 64,127 feet board measure, cedar; 2,000 feet board measure, rock elm; 110 cords stone and 900 lbs. iron were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence . . . . .	\$1,019 42
Materials . . . . .	1,810 75
Dredging . . . . .	1,100 00
	<hr/>
	\$5,930 17

## PORT HOPE.

Port Hope is situated in the county of Durham, on the north shore of Lake Ontario, sixty-three miles east of Toronto, on the Grand Trunk Railway, and has a population of 4,188. The chief trade is in lumber and grain.

At the session of parliament of 1903, the sum of \$7,500 was appropriated for repairs to piers and dredging at this place, and on August 5, authority was given to expend the sum of \$5,000 in repairs to the piers. Work was commenced on June 23, 1904.

The work consisted in the rebuilding of 40 feet in length by 32 feet in width of the superstructure of the east pier, south of the lighthouse, 45 feet in length of same pier, south ends of the warehouse, and 180 feet in length of the centre pier repaired, on an average height of 4½ feet, with the other repairs that were found necessary.

In doing the above work, some 55,841 feet board measure pine, nine piles and 1,061 pounds iron were used.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence . . . . .	\$2,270 49
Materials . . . . .	2,729 51
	<hr/>
	\$5,000 00

## RIVIÈRE AUX PUCES.

Puce is a village on the south shore of Lake St. Clair, thirteen miles east of Windsor.

At the session of parliament of 1903, the sum of \$1,800 was appropriated for the renewal of the sheet piling at this place, and authority was given on August 5, the same year to expend the amount by day labour. 250 lineal feet of work was renewed on the west side and 50 feet on the east side.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence . . . . .	\$ 599 63
Materials . . . . .	985 07
	<hr/>
	\$1,584 70

## SESSIONAL PAPER No. 19

## ROBBIN'S LANDING.

Robbin's Landing is a small settlement on the south shore of Rice lake, nine miles east of Harwood, and twenty-three miles north-east of Cobourg.

Authority was given in June, 1904, to expend the sum of \$70 in repairs to the wharf at this place, which had been damaged by an ice shove during the spring.

Expenditure for fiscal year 1903-04, \$143.44.

## RONDEAU.

Rondeau is situated in the county of Kent, at Pointe aux Pins, on the north shore of Lake Erie, about 140 miles west of Port Colborne, the Lake Erie entrance to the Welland canal. It is a harbour of refuge and a very important one on this side of the lake. Of late years the beach at Rondeau has become a much frequented summer resort, and many cottages have been erected. The Erie and Huron Railway have constructed their line this far, and have established a dock for lake ferry to deliver coal in cars from the other side.

At the session of parliament of 1903, the sum of \$6,000 was appropriated for improvements to the piers at this place, consisting in the construction of sheet pile 'protection works to the west pier to prevent the sand silting through from the lake into the channel, the work to be done by day labour, as the amount was not sufficient an additional sum of \$5,600 was authorized to be expended on the work.

In doing the above work, some 156,984 feet board measure, pine ; 56,669 feet board measure, oak and 21,611 pounds of iron were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$3,058 50
Materials. . . . .	8,597 72
	<hr/>
	\$11,646 22

## ROSEDALE.

Rosedale is a village in the county of Victoria, on the Rosedale river, 8 miles from Fenelon Falls.

At the session of parliament of 1903, the sum of \$1,000 was appropriated for the construction of a wharf at this place, and on November 8, 1903, authority was given to do the work by day labour.

The work consists of a landing pier in the centre of the river, made up of two cribs with a span between, giving a total length of 50 feet by 16 feet in width ; a timber approach of cribs and spans 100 feet in length by 12 feet in width, and a road approach of 45 feet in length.

In doing the above work, some 10,782 feet board measure cedar ; 8,010 feet board measure pine ; 12,179 feet board measure hemlock and 1,274 pounds iron were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence. . . . .	\$357 76
Materials. . . . .	627 88
	<hr/>
	\$985 64

4-5 EDWARD VII., A. 1905

## ST. JOSEPH.

St. Joseph is situated on the east side of Lake Huron, in the county of Huron, about 14 miles south of Goderich. Population 500.

At the session of parliament of 1903, the sum of \$4,000 was appropriated for completing the wharf at this place, and on May 30, 1904, the department accepted the offer of Mr. J. A. Corry to complete the structure for the sum of \$3,975.

Expenditure for fiscal year 1903-04, \$4,604.11.

## SARNIA.

Sarnia, the county town of the county of Lambton is situated on the St. Clair river, six miles south from Lake Huron.

At the session of parliament of 1903, the sum of \$6,000 was appropriated for dredging at this place, orders were given to employ the dredging plant of Mr. C. S. Boone, 'General Meade' to do the work required, to be paid for at the rate of \$12 per hour, removing 800 cubic yards per day of ten hours.

Work was commenced on August 17, 1903, and completed on September 19, the same year, during which time the plant worked 346 hours and removed 30,704 cubic yards of material.

The dredging was performed in front of the Grand Trunk Railway wharf and the Lake Erie Ferry slip.

Expenditure for fiscal year, 1903-04 :—

To paid, C. S. Boone, dredging.....	\$4,152 00
“ C. S. Boone, towage.....	1,341 00
“ inspection.....	158 40
	<hr/>
	\$5,651 40

## SAULT STE. MARIE.

Sault Ste. Marie is situated at the head of St. Mary's river, which connects Lake Superior with Lake Huron.

At the session of parliament of 1903, the sum of \$18,300 was appropriated for harbour improvements at this place, and on April 12, 1904, the contract for the extension of the government wharf was let to Mr. Joseph Battle, for the sum of \$65,000.

Some rock was blasted and removed, and dredging done in front of A. D. MacKay's wharf at this place, during July and August, 1903.

Total expenditure for fiscal year 1903-04, \$13,669.42.

## STURGEON FALLS.

Sturgeon Falls, a pos village in the district of Nipissing, Ont., is situated on the Sturgeon river and on the Canadian Pacific Railway.

The Sturgeon river is available for boats plying on Lake Nipissing.

During the fiscal year 1902-03, the sum of \$500 was granted by parliament to be applied towards the construction of a wharf and approaches.

On January 23, 1903, a contract was let for the construction of a wharf at the foot of Wharf lane, for the sum of \$2,810.

The wharf is 30 feet wide, has a frontage of 100 feet for a depth of 10 feet of water, together with an approach 20 feet wide and 40 feet long. The structure is built of four cribs united by platforms 6 feet above low water level.

Expenditure for fiscal year 1902-03, \$506.54.

## SESSIONAL PAPER No. 19

During the fiscal year 1903-04, an additional sum of \$4,500 was granted by parliament.

The contract was completed in September, 1903.

A freight shed was added, and a suitable approach was built by grading and macadamizing Wharf lane, which is 200 feet in length and 33 feet in width. Repairs were also made to the approach, which sustained damages in the spring of 1904.

Expenditure for fiscal year 1903-04, \$4,123.18.

Total expenditure to June 30, 1904, is \$4,123.18.

## SYDENHAM RIVER.

Sydenham river has its outlet in 'Chenal Ecarté' the passage between Ste. Anne island and the mainland. From its mouth to Wallaceburg, it is a large navigable stream, above this point it divides into two branches, north to Wilkesport 14 miles, and east past Dresden, 15 miles, and on these two branches small steam craft with scows are run, and booms of timber are rafted.

At the session of parliament of 1903, the sum of \$5,800 was appropriated for improvements to the Sydenham river, and on July 24 the same year, authority was given to employ the plant of the Chatham Dredging Co., to remove the bar at the mouth of the Sydenham river (Chenal Ecarté), the terms being 13½ cents per cubic yard removed.

Work was commenced on August 26, and completed on November 3, 1903, during which time the plant removed 13,168 cubic yards of material at a cost of \$1,777.67, and worked 139 hours removing obstructions, in the shape of sunken logs, snags, &c., for which payment was made at the rate of \$8 per hour, 4,280 cubic yards of material were removed from the 'Chenal Ecarté' at 13½ cents per yard, also 39 hours dredging was done at Tupperville, at \$8 per hour, 10 hours time was allowed for towage from Tupperville to Mitchell's bay at \$4 per hour.

Expenditure for fiscal year 1903-04, \$3,677.57.

## THESSALON.

Thessalon is situated on the north side of the north channel of Lake Huron, in the district of Algoma, 50 miles east of Sault Ste. Marie. Considerable lumber is shipped from this place.

At the session of parliament of 1903, the sum of \$5,000 was appropriated for the construction of a breakwater at this place, plans and specifications were prepared and tenders called for.

Some repairs to the wharf were authorized in March, and completed in May, 1904.

Expenditure for fiscal year 1903-04, \$417.27.

## THORNBURY.

Thornbury, an incorporated village in Grey county, is situated at the mouth of Beaver river, which empties into Georgian bay, on the Meaford branch of the Grand Trunk Railway, 8 miles from Meaford, and 19 miles from Collingwood. It contains four churches, twenty stores, two hotels, two grist, one saw, one woollen and one planing mill, two printing offices issuing weekly newspapers and telegraph and express offices. Population, 900.



## 4-5 EDWARD VII., A. 1905

At the session of parliament of 1903, the sum of \$1,500 was appropriated for repairs to harbour works at this place, and on August 5, authority was given to expend the amount. The work consists in repairs to the landing pier, renewing much of the portion below low water, from the shore end out, some 400 feet in length.

Work was commenced on August 26, 1903, and continued up to December 29, when operations ceased for the winter months. Work was recommenced on May 7, 1904. In connection with the above work, some 15,750 feet board measure cedar; 900 feet board measure elm and 456 pounds iron were used.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence . . . . .	\$1,155 97
Materials . . . . .	343 95
	<hr/>
	\$1,499 92

## TOLSMAVILLE.

Tolsmaville is a village on the east shore of Cockburn island, Georgian bay, in Algoma district. Bruce Mines is the nearest railway point.

On July 18, 1903, instructions were given to repair the wharf at this place, and the sum of \$400 was authorized for this purpose, to be charged to Harbours Generally.

The work consisted in replanking and renewing the floor stringers, the full length of the wharf, and in doing so, the following materials were used : 7,248 feet board measure cedar; 7,044 feet 3-inch cedar plank; 700 feet board measure oak, and 700 lbs. iron.

Expenditure for fiscal year 1903-04 :—

Labour and superintendence . . . . .	\$142 25
Materials . . . . .	257 49
	<hr/>
	\$399 74

## TORONTO.

Toronto harbour is situated on the north shore of Lake Ontario, and is formed by a circular bay  $1\frac{1}{2}$  miles in diameter, separated from the lake by a low island (formerly a peninsula) about 6 miles long, making a safe and well-sheltered harbour, for containing a large number of vessels.

At the session of parliament of 1903, the sum of \$14,000 was appropriated for works at the eastern entrance, and authority was given on August 7 to apply the amount of the appropriation in constructing four groynes to prevent the erosion of the south shore of the island, and in making general repairs to the eastern piers, &c.

Four groynes were constructed on the south shore of the island, and repairs were made to the face timbers of the east pier, the decks of the east and west piers were also renewed.

Dredging was carried on for a period of 33 days, but, owing to heavy fall storms, the dredging was discontinued.

The following quantities of materials were used in the construction of groynes and repairs to piers, 70,340 feet board measure hemlock; 6,228 feet board measure pine, 4,343 white oak, 1,608 lineal feet of brush matting and 471 cubic yards of stone.

The sum of \$20,000 was also appropriated for sheet piling a length of 1,000 feet on the channel side of the eastern pier, northwards from the lighthouse.

Up to June 30, 927 lineal feet of the pile work had been completed.

In doing the above work, the following quantities of materials were used : 265,707 feet board measure, southern pine; 79,330 feet board measure, white pine; 4,808 feet board measure, white oak, and 2,252 feet board measure, tamarack.

Expenditure for fiscal year 1903-04, \$44,680.73.

## SESSIONAL PAPER No. 19

## VICTORIA HARBOUR.

Victoria Harbour is situated in the county of Simcoe, on Matchedash bay, ten miles west of Midland.

At the session of parliament of 1903, the sum of \$8,000 was appropriated for dredging at this place, and on May 27, orders were given to employ the plant belonging to Mr. C. S. Boone, to do the work required, the terms being \$12 per working hour, removing 80 cubic yards of material, or 800 cubic yards per day of ten hours. The plant was at work during 449½ hours, removing 34,288 cubic yards.

Expenditure for fiscal year, 1903-04 :—

To paid, Mr. C. S. Boone, use of plant. . . . .	\$6,804 00
“ inspection. . . . .	160 10
	<hr/>
	\$6,964 10

## WASHAGO.

Washago is a village in the county of Simcoe on the Severn river, and is distant thirteen miles north-east of Orillia.

At the session of parliament of 1903, the sum of \$2,000 was appropriated for regulating the waters of Lakes Simcoe and Couchiching, repairs to works at Washago, &c.

This work was carried out in two sections, part of the work being done on the Severn river above the stop-log dam near Washago, consisting of blasting and cleaning out river bed of obstructions, and the other portion of the work consisted in removing by blasting, obstructions in Black river and Blind channel near Washago.

Expenditure for fiscal year, 1903-04 :—

Labour and superintendence. . . . .	\$1,670 64
Materials. . . . .	256 31
	<hr/>
	\$1,926 95

## WENDOVER.

Wendover, in the county of Prescott, is situated on the south shore of the River Ottawa, opposite North Nation Mills, a station of the Canadian Pacific Railway. The nearest railway station on the south shore is Plantagenet, distant about eight miles.

The construction of a wharf at this place was commenced in September, 1901. It consists of the following, viz.:—

(a.) A stone embankment 160 feet long from the shore, 18 feet wide at the top with slopes of 1 in 1 on the sides, and a height of 12 feet at the north end.

(b.) A trestle or pile approach 342 feet in length from the stone embankment to the head block, by a width of 18 feet, for 294 feet of its length, and a width of 60 feet for the remaining 48 feet adjacent to the headblock.

(c.) A headblock of pile-work laid at an angle of 82°, 30' with the approach 71 feet in length, by a width of 32 feet, with a close-faced cribwork ice-breaker, 37 feet by 24 feet, at its up-stream end.

The wharf at its outer face has a height of 30 feet, stands in 10 feet at low water, and is three feet above the high water level.

During the fiscal year 1903-04, the sum of \$1,097.48 was expended in completing the wharf at that place. The work consisted in re-enforcing the bracing of the

4-5 EDWARD VII., A. 1905

pile approach, lowering the top of the hill on the road leading to the wharf and completing the stone embankment.

The work was carried out by day labour. The total expenditure on that work is, \$10,694.12.

## WIARTON.

Warton is situated in the north riding of the county of Bruce, at the head of Colpoy's bay, about thirty-two miles north of Owen Sound. It is the terminus of the Georgian Bay and Lake Erie branch of the Grand Trunk Railway.

At the session of parliament of 1903, the sum \$10,000 was appropriated for the construction of a wharf on the east side of the harbour at this place.

Plans and specifications were prepared, and tenders called for this work, but, owing to some difficulty in obtaining the right-of-way, the work has not been let.

## PROVINCE OF MANITOBA.

## FAIRFORD RIVER CANAL—LAKE MANITOBA OUTLET.

The work of procuring material and equipping a plant to do the work of cleaning out the bed of the Fairford river, at the foot of the Fairford River canal, was proceeded with.

This plant, which is the main item of cost for this work, is also intended to be used in connection with both the Mossy river and lowering Lake Dauphin, so that part of its cost was charged to the latter works. The clam shell that was taken out of Lake Manitoba in 1903, was cleaned up and put together again, placed upon a scow, and is in a condition to work. One of the difficulties to be overcome in connection with this work, is, that it is a long distance from the nearest centre of population, and the need of a staunch tug, to look after the dredge, was felt.

The expenditure incurred in connection with this work, during the fiscal year 1903-04, amounted to \$2,243.59.

## GIMLI, LAKE WINNIPEG.

Owing to the yearly damages caused by the waves to the rip-rap approach to this pier, piles were driven through the stone that remained of the old approach, on a length of 100 feet from the permanent work.

The pilework was capped, stringered and planked over, near the shore, a stone embankment was built on a length of 50 feet, together with minor repairs to the wharf.

The expenditure for the year 1903-04 was \$1,111.83.

## GULL HARBOUR.

It was found that the outer 60 feet or so of the Gull Harbour wharf had settled over 2 feet. The sum of \$1,306.72 was expended during the fiscal year 1903-04 in rebuilding the wharf on that height and putting on a new floor.

## HNAUSA, LAKE WINNIPEG.

The wharf at this place was the first constructed by the department on Lake Winnipeg. The cribwork, for a length of 300 feet, had deteriorated, sagged, and settled. This part was levelled and the flooring renewed, and a small cribwork pier was built

## SESSIONAL PAPER No. 19

in the place of the old stone approach, a short stone embankment was made on shore, next to the new pier.

The expenditure during the fiscal year 1903-04, was \$1,450.20.

## ICELANDIC RIVER.

The site of the wharf at Icelandic river is 4 miles up the stream from Sandy bay. Only boats of moderate, 4½ feet, draft can go up this stream at present, on account of the bar at its mouth, although a depth of water varying from 10 to 15 feet is found in the river.

A pile wharf was commenced at this place during the fiscal year 1903-04, for which the sum of \$844.04 was expended.

## LOWERING LAKE DAUPHIN.

The work of equipping a plant to do the work of cleaning out the bed of the Mossy river, for the purpose of regulating the flow of Lake Dauphin, was proceeded with. Material has been ordered for the construction of a plant that would answer this purpose as well as the Winnipegosis and Fairford river works. The sum of \$2,224.26, was expended during the last fiscal year in providing the material and labour required to equip the said plant.

## SELKIRK WHARF.

An extension of 200 feet to this wharf was constructed during the fiscal year 1903-04. Part of the material for a further extension of 100 feet, was also ordered, but owing to the strong objections raised by the owner of the property that would adjoin this further work, it was not proceeded with.

The total cost of the extension and the material alluded to, aggregated \$2,953.23.

The work consists in ordinary piling with anchor piles and sheet piling, filled in with loose stone. Grading and filling back of the wharf was also done.

The extension, as well as the old wharf, stood the enormous flood and ice shove of the spring of 1904 without damage.

The total length of the present wharf is 500 feet, and is a great accommodation for several boats which call here to unload lumber, cordwood, fish and general merchandise.

## ST. ANDREW'S RAPIDS, LOCK AND DAM.

The actual work done on construction, by the contractors during the fiscal year 1903-04, has consisted of the removal of 1,330 cubic yards of rock from the site of the proposed lock. This was accomplished during the period extending from July 1, 1903, to September 12, 1903.

With the exception of a small quantity of trimming, the excavation for lock foundation is practically completed.

From September 30, 1903, to February 26, 1904, 3,800 cubic yards of stone for crib filling and for crushing were delivered on the site of the work. Of this quantity, 876 cubic yards have been rejected, as being too large to use for crib filling and too expensive to break with the crusher.

From February 26, 1904, to April 5, 1904, 504 cubic yards of sand for concrete were delivered on the site of the work.

The above comprises all the work accomplished during the year by the contractors for the lock and dam.

4-5 EDWARD VII., A. 1905

## PROVINCE OF BRITISH COLUMBIA.

## ANDERSON AND KENNEDY LAKES.

Anderson lake empties into Uchucklesit inlet in Barclay sound and Kennedy lake Clayoquet sound, near its head on the west coast of Vancouver island.

The work is for the purpose of improving the outlets of these lakes to salt water, giving access to boats, without the necessity of breaking bulk in the carriage of supplies, to the mining claims in course of development on both lakes, which, in number and importance, are almost identical. The work consists of the removal of rocks and boulders from the channels and a facing of cribwork on the land side for the purpose of tracking up boats and canoes during low tide. This work is now approaching completion and has been much appreciated by those concerned.

The expenditure for the year ending June 30, 1904, on the above work was as follows :—

*Anderson Lake—*

Wages.....	\$ 696 75
Provisions.....	215 15
Material.....	87 24
	<hr/>
	\$ 999 14

*Kennedy Lake—*

Wages.....	1,172 00
Provisions.....	226 96
Material.....	100 29
	<hr/>
	1,499 95

Total.....	<hr/>	\$2,499 09
------------	-------	------------

Appropriation.....		2,500 00
--------------------	--	----------

Balance.....		91
--------------	--	----

## COLUMBIA RIVER, ABOVE GOLDEN.

The working season on this portion of the Columbia river is regulated by the annual rise of water, and is covered as a rule by the months of July, August and September. The spring months give but little time for work from the time the ice leaves the river until the spring rise, usually occurring early in May.

During the year 1903-04, the old dredge 'Muskrat' was able to do very good work in putting in a long wing dam at Horsethief creek, some 400 feet in length ; one below Little warehouse, a quarter of a mile below Horsethief creek bar ; and another across the head of Irvine's channel. The object of these wing dams is to confine the water, as much as practicable to one channel, and thus getting the benefit of the increased current consequent upon such contraction to scour out the bars. This method has been found both preferable to and more permanent than dredging. The dredge 'Muskrat' was worn out and practically useless in any case and had to be condemned. The result of the present method of improvement has been very satisfactory—there is a greater depth of water now on the different bars during extreme low water than ever before, and the river steamers run from the opening of navigation until closed by ice. These dams will in some cases require further extension to get the best results.

## SESSIONAL PAPER No. 19

They are well and strongly built consisting of two rows of piles, 5 feet apart, driven from 7 to 8 feet centres, filled with brush and loaded with rock, making an effective and comparatively permanent dam.

## NEW HULL.

In the month of April work was commenced on a new hull for tug boat, &c., to be used in connection with pile-driver and moving scows, &c., in the work of river improvement, the old dredge, as stated, being unsafe and condemned. The work of building the new hull was carried on continuously until completion at the end of June. It was found necessary to get the lumber, &c., from the coast, which was better and no more expensive than the local mills, which were, however, unable to fill the bill satisfactorily. Some delay was caused in consequence, but the boat was satisfactorily launched in the early part of July. Her length of hull is 80 feet, beam 20 feet, with 2 ft. guard rail. The lower deck is reserved almost entirely for working purposes and affords ample room for work benches, hoisting engines, fuel, &c. On the upper deck a house has been built with caboose, mess-room, staff quarters, room for conductor, and complete sleeping quarters for eight men. She has had two coats of paint inside and out and has been completed, exclusive of equipment, under the appropriation of \$4,500.

## WILMER CHANNEL.

This is a work that has been under consideration for some years past and was during the last fiscal year prosecuted under an appropriation of \$1,000 granted for the purpose. The work was commenced on April 11, 1904, the object being to connect the river with a slough so as to give access to the foot hills, about half a mile distant from the river, during high water. The work has, however, been completed to the satisfaction thus far of the residents of Wilmer, and a channel 350 feet long, 50 feet wide, and from 2½ feet to 3 feet in depth has been excavated.

The following is the expenditure under the different heads comprising the above service for the fiscal year 1903-1904:—

*Columbia River above Golden:—*

Wages.....	\$1,552 97	
Provisions.....	231 60	
Material.....	571 24	
Fuel.....	132 25	
Transportation.....	203 60	
Rent.....	96 00	
		<hr/>
		\$2,787 66

*New Hull:—*

Material.....	\$2,163 50	
Wages.....	2,571 23	
Transportation.....	55 90	
		<hr/>
		4,790 63

*Wilmer Channel:—*

Material.....	\$ 140 00	
Wages.....	732 40	
Freight.....	42 00	
		<hr/>
		914 40

Total..... \$5,492 69

4-5 EDWARD VII., A. 1905

## COLUMBIA RIVER, BELOW GOLDEN.

The bulk of the expenditure for this work was made during the month of October and the first week in November, 1903, in putting in a wing dam at the head of Kitchen's rapids, four miles above Beaver, extending from the east or right bank of the river almost entirely across the Columbia, to prevent the logs from piling up, as heretofore, on the reef or bar extending across the entire river and causing the rapids. This improvement was made at the request of the Columbia River Lumber Company, the dam has quite fulfilled all that was expected from it. Owing to a somewhat early rise, on November 7, it was not possible to complete this work until the low water in April and May of 1904. The dam is a crib of round logs, put together with close cross ties and drift bolts, well filled and weighted with boulders and quarried rock, and has already been fairly well tested by the high water. A small boom was also put in across an outlet leading out of Aylmer channel. This work was done by the Columbia River Lumber Company, and is sufficiently strong to answer the purpose intended.

The expenditure for the year 1903-04 was as follows :—

Wages . . . . .	2,329 22
Provisions . . . . .	437 71
Material . . . . .	2,022 87
Transportation . . . . .	125 07
Total . . . . .	\$4,924 87

## COLUMBIA RIVER, ABOVE REVELSTOKE.

This work is a continuation of the improvement of this portion of the Columbia river, extending from the city of Revelstoke to the present head of navigation at Downey creek, 10 miles below the foot of the 'Dalles des Morts,' or Death's rapids, a distance of 40 miles. It is an exceptionally difficult stretch of water to navigate under any circumstances, and the work has thus far been directed to the removal of the worst points of rock and reefs and the many boulders obstructing the channel, forming a serious menace to the safety of the steamer 'City of Revelstoke,' running on this route. The work done has been of very great benefit to navigation, but, in common with all works of this nature, the removal of one difficulty sometimes develops another, so that the general work of improvement must be taken in detail and carefully considered before being commenced to prevent increasing instead of lessening the difficulty.

The expenditure for the fiscal year 1903-04 was as follows :—

Wages . . . . .	\$3,729 51
Provisions . . . . .	642 12
Material (explosives, &c.) . . . . .	1,513 64

## COLUMBIA RIVER, BETWEEN ARROW LAKES.

This service, representing the work of the dredge 'Nakusp.' After a thorough examination and test of this new dredge, it was found necessary to make alterations in the machinery which were not completed until February, 1904, since which time, or the opening of navigation, the dredge has done good work in front of the Canadian Pacific Railway at Arrowhead and Robson, and elsewhere.



## SESSIONAL PAPER No. 19

The expenditure for the fiscal year 1903-04 was as follows :—

Wages . . . . .	\$5,775 35
Provisions . . . . .	2,120 78
Material . . . . .	2,936 96
Fuel . . . . .	400 70
Scow hire . . . . .	459 00
Transportation . . . . .	83 94
Contingencies . . . . .	6 85
<hr/>	
Total . . . . .	\$11,783 58

## DUNCAN RIVER.

The usual work of clearing the banks of leaning trees and brush projecting over the channel and removing snags and stumps deposited by erosion constitutes the operations in connection with the above service in the spring of 1904 during the lowest stage of water obtainable. This work is of annual recurrence and will continue until the river has settled into a defined direction.

The expenditure for the fiscal year 1903-04, was as follows :—

Wages . . . . .	\$1,503 00
Provisions . . . . .	382 90
Transportation . . . . .	107 25
<hr/>	
Total . . . . .	\$1,993 15

## FRASER RIVER.

During the fiscal year 1903-04 some much needed repairs were made to the protection works at Point Garry at the mouth of the river, and repairs and an extension to the dam on Sand Heads, a mile below Point Garry, to check the threatened diversion of the channel to the north. In the former case twenty-two mattresses, 26 by 60 feet and 2½ feet thick, covering a length of 600 feet, were sunk in position and 2,150 tons of rock used on new mattresses and in strengthening weak points. In the latter case, the upper end of dam was extended some 220 feet sinking eight mattresses 26 by 80 feet, 2½ feet thick, and two mattresses, at the lower end, of the same dimensions, 26 x 80 x 2½ feet, the shore connections were strengthened. Three hundred tons of rock were used in loading these mattresses and 7,000 tons were used in raising the height of the dam and filling in gaps which had been out between the original mattresses, in some cases to a depth of 15 feet. The length of dam is 3,500 feet and its stability is of vital importance to the maintenance of the present channel through the Sand Heads.

In addition to the above expenditure, one month's work of the dredge 'King Edward' and snag boat 'Samson' was charged to this service. Two new scows were also built.

4-5 EDWARD VII., A. 1905

The expenditure for the fiscal year 1903-04 was as follows:—

*River Improvement :—*

Wages.....	\$11,218 61	
Provisions.....	2,165 81	
Material.....	4,261 96	
Tug hire.....	3,685 75	
Scow hire.....	928 00	
Tide gauges.....	501 70	
Superintendence.....	1,638 20	
Boiler for pile-driver.....	616 18	
New scows.....	5,131 41	
Repairing dyke.....	66 00	
Contingencies.....	20 70	
		<hr/> \$30,234 32

*Dredge King Edward :—*

Wages.....	\$ 1,092 00	
Provisions.....	446 94	
Material.....	109 30	
Tug hire.....	628 33	
Fuel.....	682 00	
Contingencies.....	6 45	
		<hr/> 2,965 02

*Snag Boat Samson :—*

Wages.....	\$ 625 00	
Provisions.....	225 97	
Material.....	103 68	
Water.....	10 67	
Contingencies.....	2 40	
		<hr/> 967 72

Total.....\$34,167 06

QUATSINO.

Quatsino Sound is the most northerly harbour on the west coast of Vancouver island, and is directly west of Hardy bay, which is, correspondingly, the most northern harbour on the east coast. The two are connected by a fairly passable trail and are distant  $11\frac{1}{2}$  miles. In the immediate vicinity of Quatsino wharf there is a saw-mill, an Indian village and trading post, and the Yreka mines, with which considerable traffic is done. During the fiscal year, a wharf was built at this place to enable the regular bi-monthly steamer to discharge freight and mails. The wharf is a substantial structure, extending out to deep water by an approach 250 feet in length with a T of 100 by 40 feet, and a small warehouse for storage purposes was built thereon.

The expenditure was as follows :—

Wages .. . . .	\$1,852 71
Provisions .. . . .	601 26
Material .. . . .	2,015 88
Engine hire .. . . .	502 50
Contingencies .. . . .	19 35

Total .. . . . \$4,991 70

## SESSIONAL PAPER No. 19

## SIDNEY BREAKWATER.

The exposed position and broken weather delayed the commencement of this work until March 1 last, since which time the work has been steadily continued to the end of the fiscal year. The work consists of a pile protection extending from the shore at Sidney, some 1,000 feet, to give a sheltered area and protect the wharf now used by the Victoria Terminal Railway and Ferry.

The expenditure has been as follows :—

Wages . . . . .	\$3,431 79
Material . . . . .	3,548 72
Tug hire . . . . .	519 00
Fuel . . . . .	65 00
Team hire . . . . .	171 00
Contingencies . . . . .	3 85
Total . . . . .	\$7,739 36

## SKEENA RIVER.

The expenditure on the Skeena river for the year 1903-04 has been exclusively confined to snagging at the mouth and on the upper reaches of the river, or to the head of tide water, some thirty miles, and to the necessary repairs to the snag scow, which has neither the power nor size to cope with the large snags and constantly increasing demands by the fishermen for the removal of these obstacles to fishing. The balance remaining at the conclusion of the fishing season in August, 1903, of some \$2,882.50, did not admit of attempting the removal of boulders, &c., on the upper river between Kitsilas canyon and Hazleton, at the forks, a distance of 80 miles—which is still required—but was devoted to repairs and renewed work of snagging, beginning on April 11, 1904, and carried on continually to the end of the fiscal year, June 30, 1904. The work is reported as being fairly satisfactory, the limited powers of our snag scow considered. There are still many large snags in deep water which it is not possible to raise or dispose of with the present appliances, and which should be removed. Consequently the want of a powerful snag boat is badly felt.

In a short time the fishing industry on the Skeena will possibly be double its present extent. There are at present some thirteen canneries tributary to this service, averaging in good years 250,000 cases annually. They have now in use over 11,000 nets, of 200 fathoms in length each, and valued at \$150 each. They claim that the damage done annually to their nets by snags amounts to one-third of their value, which as can be seen, entails a very serious loss to the cannerymen, who furnish the entire outfit of boats and nets to the fishermen. These nets are also being made deeper than formerly, with the result that there is a greater development of snags and consequent demand for their removal. These considerations all point to the importance of an improvement in the appliances for the removal of this source of trouble.

The expenditure in connection with the above service for the year 1903-04, is as follows :—

Wages . . . . .	\$2,904 51
Provisions . . . . .	715 24
Material . . . . .	681 46
Fuel . . . . .	603 50
Tug hire . . . . .	45 00
Total . . . . .	\$4,949 71

4-5 EDWARD VII., A. 1905

## SPALLUMCHEEN RIVER.

The work on this river consisted in the protection of the bank of the Spallumcheen river at the town of Enderby on the property of the Columbia Flouring Mills Co. The river was making serious inroads in this property immediately in front of the company's mills and offices, and it was upon their application that the work was carried out. There was some imperfect protection done by the Mill Co., but it has, in a great measure, disappeared. The work done by the government consists of a protection wall about 300 feet in length built by driving piles at 5 feet centres along low water line which are faced with 2 x 8 inch planks laid 4 inches apart to a height of about ten feet and then backed with brush loaded with rock. From the front row of piles at water line there are ties to a second row driven well in shore.

The expenditure for the fiscal year 1903-04 was as follows :—

Wages.. . . .	\$ 816 75
Material.. . . .	671 81
Contingencies.. . . .	1 60
<hr/>	
Total.. . . .	\$1,490 16

## THOMPSON RIVER.

The work consists in an improvement in the navigation of the North Thompson river, which it was decided to do by means of wing dams to contract the channel and get the consequent scour and deepening of the bars where most necessary. It was not possible to complete the dam during the fiscal year owing to the sudden and unexpected rise in the river.

The expenditure for the fiscal year 1903-04 was as follows :—

Wages.. . . .	\$1,555 40
Provisions.. . . .	645 94
Material.. . . .	635 96
Team hire.. . . .	231 50
Hoisting engine.. . . .	1,677 10
<hr/>	
Total.. . . .	\$4,746 10

## VICTORIA HARBOUR.

The dredge 'King Edward' worked from July 1 to November 21, 1903, for filling in the James bay flats in rear of the retaining wall and the site of the proposed new Canadian Pacific Hotel now definitely settled to be located on this property, the work was not completed. The cost of the services of the 'King Edward,' although she did not exceed the time anticipated, were enhanced by the necessity of charging repairs to this service instead of to that of dredge repairs, which was exhausted.

The dipper dredge 'Mud Lark' was engaged in deepening the entrance channel from the outer wharf to the inner harbour to a depth of 17 feet at extreme low tide. The material is very hard and the dredge very shaky.

The construction of the Marine Railway, capable of accommodating vessels of 3,000 tons, at the head of the Inner harbour, now nearing completion by the Victoria machinery depot, will necessitate further dredging in that direction. This work can be done by the 'Mud Lark' upon the completion of her present work. While capable of doing this harbour work, she is unfit to move to other distant points involving crossing or navigating the Gulf of Georgia.

## SESSIONAL PAPER No. 19

The expenditure for the fiscal year 1903-04, was as follows :—

*Dredge King Edward—*

Wages.. . . .	\$5,889 29
Provisions.. . . .	1,594 95
Material.. . . .	901 10
Water.. . . .	9 25
Coal.. . . .	3,753 99
Tug hire.. . . .	129 50
Contingencies.. . . .	58 36
	<hr/> \$12,336 44

*Dredge Mud Lark—*

Wages.. . . .	\$5,546 53
Provisions.. . . .	1,946 01
Material.. . . .	2,653 78
Fuel.. . . .	2,415 50
Water.. . . .	58 78
Contingencies.. . . .	17 58
	<hr/> 12,638 18
Total.. . . .	\$24,974 62
Appropriation.. . . .	25,000 00
	<hr/>
Balance.. . . .	25 38

## WILLIAM'S HEAD QUARANTINE STATION.

The work in connection with this quarantine station in the fiscal year 1903-04, has been more than usually heavy and much needed work has been done.

The works were commenced on April 6 last and were carried on continuously until the end of the fiscal year. The work consisted of replacing the pipe line over the small ravines by new trestle work and new 4-inch cast iron pipe—some 500 feet in length ; gravelling and completing the road connecting the station with the main Metchisin road, some 2½ miles, the only means of access, other than by water, from the city of Victoria to the station and over which supplies, &c., are delivered during quarantine; and the completion of an entirely new road and tramway connecting the disinfecting station with the central and western approaches to the wharf. A large number of new drives, well gravelled and graded, have been opened through the grounds much to their advantage, both in appearance and convenience.

The water service will require further attention as the original pipes are far gone with erosion and perforation but are being gradually replaced with new cast-iron pipes; the grounds and general efficiency of the station have never been in as good a shape as at present.

The expenditure for the fiscal year was as follows:—

Wages....	\$ 6,132 15
Team hire....	979 31
Material....	3,557 59
Contingencies....	4 00
	<hr/>
Total....	\$10,973 05

## DREDGING OPERATIONS.

During the fiscal year 1903-04, dredging was done at the following places :—

## PROVINCE OF NOVA SCOTIA.

Acadia Coal Company piers, Pictou county.  
Barrington channel, Shelburne county.  
Burnham & Morrell wharf, Pictou county.  
Eastern harbour, Cheticamp channel, Inverness county.  
Hogg, Craig & Co., wharf, Pictou.  
Intercolonial Railway, Pictou landing wharf, Pictou county.  
Intercolonial Mining Company piers—Skinner's Point, Pictou county.  
Liverpool Bar and channel, Queen's county.  
Mabou channel, Inverness county.  
Main channel to Market wharf, Pictou county.  
Marine slip and wharf, Yarmouth county.  
Market wharf, Pictou county.  
Pictou Bar, channel, Pictou county.  
Port Hood Coal Company wharf, Inverness county.  
Steamboat wharf and channel, Yarmouth county.

## PROVINCE OF PRINCE EDWARD ISLAND.

Halliday's wharf, Belfast, Queen's county.  
Morrell channel, King's county.  
Vernon River bridge, pier and channel, Queen's county.

## PROVINCE OF NEW BRUNSWICK.

Caraquet, foundation new pier and old wharf, Gloucester county.  
Gagetown wharf and channel, Queen's county.  
Grand lake, Chamel Jemseg into Grand lake, Queen's county.  
Intercolonial Railway, N.R.C., St. John city and county.  
Neguac, Northumberland county.  
Oromocto shoals channel, Sunbury county.  
Point du Chene wharf and channel, Westmorland county.  
Queen's Coal Company bar and basin, Queen's county.  
Richibucto Bar, Kent county.  
Russel Bar, York county.  
Winter port berths for ocean steamers, St. John city and county.

## DREDGING OPERATIONS.

## PROVINCE OF NOVA SCOTIA.

## DREDGING AT ACADIA COAL PIERS, PICTOU LANDING, PICTOU COUNTY.

Pictou Harbour, Pictou county, is the finest on the southern shore of the Gulf of St. Lawrence, eastward of Gaspé. The valuable coal mines and stone quarries in the vicinity, and the finely settled and fertile country enhances its importance.

On the north shore of the harbour along the declivity of a ridge, the town of Pictou is situated, opposite which the harbour expands into three large arms, and at the head of these are East, Middle and West rivers. Pictou is the eastern terminus of a branch of the Intercolonial and of the Oxford and Pictou branch, and is 113 miles north-east of Halifax. It is well built, having many good stores, several hotels, branch banks, factories, saw-mills, iron foundry and machine shops, lumber yards, marble works, stone quarries and other industries. Here are also an academy, library Masonic hall, several churches, &c. The town has a population of about 3,235, and an extensive trade. The annual exports of coal are very large. The Prince Edward Island Navigation Company make Pictou a terminus for their steamers, and it is a place of call for other lines. Pictou has a marine slip, with two cradles capable of hauling large vessels with skilled labour for repairs, &c. The dredging done by the department at Pictou was at several localities in the harbour to facilitate shipping, &c., improving the approaches to the wharfs, and deepening at and around them for berths.

During the fiscal year 1903-04, the dredge 'Cape Breton' was engaged improving the depth of water at the new loading piers of the Acadia Coal Company, Pictou Landing, from May 25 to June 3, removing 8,400 cubic yards of mud, sand and gravel, at a cost of 10·84 cents per cubic yard. At Burnham & Morrill's wharf, on June 15 and 16, removing 1,050 cubic yards of mud, at a cost of 20·11 cents per cubic yard. At Hogg, Craig & Co., wharf, and to Main channel, June 4 to 14, removing 6,090 cubic yards mud, at a cost of 19·77 cents per cubic yard. At the Market or Harbour Commissioners wharf, June 23 to 30, removing 4,830 cubic yards mud, at a cost of 16·47 cents per cubic yard. At Intercolonial Railway wharfs at Pictou Landing, June 17 to 22, removing 3,395 cubic yards sand and gravel, at a cost of 16·90 cents per cubic yard. The Intercolonial Mining Company's loading piers, at Skinner's Point, on the East river, was further improved by the dredge 'St. Lawrence,' from May 17 to June 2, and June 8 to 10, removing 7,700 cubic yards of mud, &c., at a cost of 20·52 cents per cubic yard. This dredge was also engaged from June 3 to 7, and June 11 to 24, in improving the channel leading from the Main channel to the Market or Harbour Commissioners wharf, removing 9,100 cubic yards of mud, at a cost of 14·27 cents per cubic yard, and at the entrance to the harbour on Pictou Bar, from June 25 to 30, removing 1,750 cubic yards of sand and gravel, at a cost of 19·72 cents per cubic yard, improving the channel to 19 feet, and this work was in progress at the close of the fiscal year.

## DREDGING AT BARRINGTON PASSAGE.

A seaport town of Shelburne county, four miles west of Barrington Head, and 165 miles south-west of Halifax. The population is engaged in fishing and farming. There were no wharfs in the district having a depth of water at their outer ends, cap-



4-5 EDWARD VII., A. 1905

able of floating vessels at low water, and the bottom is of such a nature that it was not thought desirable to attempt dredging for the purpose. After an examination of the locality, it was decided to improve Sherrow's channel, a mile to the east of Robertson's wharf, and in 1888-89 the dredge 'Canada' was employed to improve the channel removing 11,745 cubic yards. In 1889-90, the work was continued by improving the channel from its mouth to where the present public wharf or pier now stands, to a depth of 11 feet, by dredging a basin to enable vessels to lie afloat at low water, when the further quantity of 8,464 cubic yards was removed. In 1891-92 the wharf or pier being completed the dredge 'St. Lawrence' improved the basin to a depth 13 feet at low water, removing 4,375 cubic yards. In 1897-98 the dredge 'Canada' removed 12,780 cubic yards, further improving the channel; and again in 1898-99 removing 12,510 cubic yards. In the fiscal year 1903-04, the dredge 'Canada' operated there, removing 19,440 cubic yards of mud, from September 1 to December 15, at a cost of 44.92 cents per cubic yard, and the work is being continued.

#### DREDGING AT CHETICAMP, EASTERN HARBOUR.

The dredge 'Geo. McKenzie' continued improving the channel at this place from October 2 to November 27, 1903, and May 25 to June 30, 1904, removing 10,775 cubic yards sand and gravel, at a cost of 60 65 cents per cubic yard, the work was still in progress at the close of the fiscal year 1903-04.

#### DREDGING AT LIVERPOOL BAR AND CHANNEL.

The dredge 'Canada,' at the close of last fiscal year, 1902-03, was engaged improving the depth of water over the bar and in the channel at Liverpool, and continued the same from July 1 to August 31, 1903, removing 11,610 cubic yards of sand and mud, at a cost of 42.56 cents per cubic yard, when the work was completed.

#### DREDGING AT MABOU.

The dredge 'Geo. McKenzie,' was engaged improving the channel to a depth of ten feet from July 1 to August 24, removing 5,405 cubic yards sand and gravel, at a cost of 71.05 cents per cubic yard.

#### DREDGING AT PORT HOOD.

The dredge 'George McKenzie' operated at the Port Hood Coal Company's loading piers, at the public wharf, and at Smith's wharf at this place, from August 25 to October 1, 1903, improving the depth of water by removing 2,970 cubic yards sand, gravel and mud, at a cost of 69.94 cents per cubic yard.

#### DREDGING AT YARMOUTH.

The dredge 'Canada' operated in Yarmouth harbour, at the marine slip and steam boat wharf or channel, alternately, as the tides answered, removing 720 cubic yards at the steamboat wharf, and 1,440 cubic yards at the marine slip, at a cost of 51.97 cents per cubic yard.

## SESSIONAL PAPER No. 19

## PROVINCE OF PRINCE EDWARD ISLAND.

## DREDGING AT HALLIDAY'S WHARF, BELFAST, QUEEN'S COUNTY.

The dredge 'Prince Edward' was operating here at the close of last fiscal year, 1902-03, and continued the work from July 1 to August 13, 1903, removing the further quantity of 13,365 cubic yards of mud and sand, at a cost of 22 03 cents per cubic yard, and completing the depth to eight feet at low water.

## DREDGING AT MORELL, KING'S COUNTY.

The dredge 'Prince Edward' operated here from September 11 to November 27, 1903, and from May 14 to June 30, 1904, cutting a channel 8 feet in depth, 60 feet in width, through the Morell bar, removing 28,755 cubic yards earth, sand, mud, clay and stone, at a cost of 30·82 cents per cubic yard; the work was being prosecuted at the close of the fiscal year 1903-04.

## DREDGING AT VERNON RIVER BRIDGE, QUEEN'S COUNTY.

The dredge 'Prince Edward' was employed here from August 14 to September 10, 1903, removing 7,380 cubic yards of sand and mud, improving the depth of water in the channel and at the public wharf there, at a cost of 26·63 cents per cubic yard.

## PROVINCE OF NEW BRUNSWICK.

## DREDGING AT CARAQUET, GLOUCESTER COUNTY.

Caraquet, a port of entry in Gloucester county, on Caraquet bay, and an inlet of the Baie des Chaleurs, 48 miles E.N.E. of Bathurst. It is an important fishing station. There is a lighthouse on Caraquet island, at the entrance to the harbour. Population about 4,074. A contract for the construction of a new wharf was awarded, and the dredge 'Cape Breton' was engaged from July 18 to September 15, 1903, preparing the foundation, at a depth of 22 feet, for the cribs, and removing 16,485 cubic yards of sand, at a cost of 38·29 cents per cubic yard. The work was completed.

## DREDGING AT GAGETOWN, QUEEN'S COUNTY.

The dredge 'New Brunswick' operated here, from August 6 to 16, 1903, widening and deepening the old dugway, and from November 6 to 14, the same year, in the creek and at the wharf, deepening and improving the channel by the removal of 6,870 cubic yards of clay, mud and silt, at a cost of 15·96 per cubic yard. The dredge 'New Dominion' also worked here from November 3 to 6, 1903, improving the lower entrance to the creek, by removing 5,475 cubic yards of mud, at a cost of 12·34 cents per cubic yard, and completing that portion of the work.

4-5 EDWARD VII., A. 1905

## DREDGING AT GRAND LAKE FLATS, QUEEN'S COUNTY.

The dredge 'New Dominion' was engaged dredging here from July 1 to September 6, and September 20 to October 16, 1903, removing 48,625 cubic yards of mud, and completing the channel 8,875 feet in length, 75 feet wide and 10 feet deep, from the head of the Jemseg river into the Grand Lake.

## DREDGING AT THE INTERCOLONIAL RAILWAY, ST. JOHN CITY.

The dredge 'New Dominion' was employed here from April 13 to May 12, 1904, opening a channel fifty feet wide, seven feet deep at low water, 150 feet in length to the end of the old Intercolonial Railway wharf, removing 9,650 cubic yards of mud, at a cost of 22·81 cents per cubic yard; also driving nine piles for securing vessels to.

## DREDGING AT NEGUAC, NORTHUMBERLAND COUNTY.

The dredge 'Cape Breton' was engaged here from September 16 to November 2, 1903, opening a channel to the public wharf at Neguac, where part of the bottom is rock, and resulted in breaking the dredge machinery, after removing 6,300 cubic yards, at a cost of \$1.10·63 per cubic yard, when the dredging closed for the season.

The Fowlie dredge was engaged, from June 7 to July 4, 1904, in cleaning up the coaming left by the 'Cape Breton,' and dredging a channel farther along the side of wharf, 1,205 cubic yards stone, mud and gravel were removed, at a cost of \$1.56½ cents per cubic yard, leaving the work to be completed.

## DREDGING AT OROMOCTO SHOALS, SUNBURY COUNTY.

The dredge 'New Brunswick' was engaged improving the Oromocto Shoals, from August 17 to November 5, 1903, removing 44,360 cubic yards sand and increasing the depth of water to 11 feet, through a narrow channel, at a cost of 10·31 cents per cubic yard.

## DREDGING AT POINT DUCHENE, WESTMORLAND COUNTY.

As stated in my report of last year. Point Duchene is situated on Northumberland strait and is the north-east terminus of the Shediac branch of the Intercolonial Railway, 2 miles from Shediac. It has long piers for shipping, and range lights on Shediac island (at the entrance) and on the pier-head.

The Prince Edward Island Steam Navigation Company steamers run every day between this port and Summerside, Prince Edward Island, while navigation is open, and connects with the trains. It contains several stores, two or three hotels, telegraph and express offices, &c., and a population of about 250. Here is Shediac harbour, the easiest of access and egress on this part of the coast. It is superior to Buctouche and Cocagne in the depth over the bar, and more extensive than the latter. The space for mooring shipping with 12 to 17 feet low water, being three-quarters of a mile in length, and from two to three cables wide, and is a secure harbour. The country about Shediac is fertile and well settled. The improvement of the channel from Chene Spit to and along the piers by dredging has occupied the attention of the department for several years. In 1874-75, the 'Canada' worked here: also in 1882-83 and 1883-84, and in 1890-91, the dredge 'St. Lawrence' giving a total amount excavated to that date, of 69,700 cubic yards, at a cost of \$21,125.92. A depth of 15 feet at low water spring tides was made. Spring tides rise 2 feet, neaps 2 feet. The dredge 'Cape Breton' was engaged here from November 1 to 30, 1902, and May 11 to June 30, 1903, in completing a 15 foot channel, one hundred feet wide at low water, from the line of the range lights on Shediac island, to the outer end of the

## SESSIONAL PAPER No. 19

public wharf, and a basin in front of the wharf to 19 feet, 360 feet in length, 140 feet wide, removing 40,110 cubic yards, at a cost of \$4,915.80 or 12.25 cents per yard, and was still prosecuting the work at the close of the fiscal year 1902-03.

From July 1 to 17, 1903 the dredge 'Cape Breton' continued the work to its completion, removing 8,295 cubic yards sand and mud, at a cost of 20.55 cents per cubic yard.

## DREDGING AT QUEEN'S COAL COMPANY, QUEEN'S COUNTY.

The dredge 'New Dominion' operated here from September 7 to 19, and October 17 to November 2, 1903, opening a channel through a bar and forming a basin at Newcastle to enable Messrs. J. S. Gibbon, to ship coal from their mines at that place, removing 14,475 cubic yards at a cost of 9.22 cents per cubic yard.

## DREDGING AT RICHIBUCTO BAR, KENT COUNTY.

The dredge 'St. Lawrence' operated here from July 7 to November 16, 1903, improving the Richibucto bar by cutting a channel 100 feet wide to a depth of 15 feet through the reef and Jib Sheet shoals, removing 35,550 cubic yards of sand, at a cost of 29.31 cents per cubic yard, and completing the channel through.

## DREDGING AT SPRINGHILL, RUSSELL BAR, YORK COUNTY.

The dredge 'New Brunswick' continued the dredging here, from July 1 until August 5, 1903, improving the inland navigation at the Russell and Chapel bars, removing 5,560 cubic yards of gravel and sand, at a cost of 28.51 cents per cubic yard.

## DREDGING AT WINTER PORT BERTHS, ST. JOHN CITY AND COUNTY.

The dredge 'New Dominion' operated at the winter port berths, St. John harbour, when tides and weather would permit, from January 28 to April 12, and from May 13 to June 30, 1904, removing 32,950 cubic yards of mud, at a cost of 19.27 cents per cubic yard, and was continuing the work vigorously when the fiscal year closed.

The dredge 'New Brunswick' also operated here, from February 18 to June 30, 1904, removing 21,130 cubic yards of mud, at a cost of 28.11 cents per cubic yard, when the dredge was withdrawn, and sent to the Washademoak lake, for work at that place.

## MARITIME PROVINCES DREDGES.

*The Dredge 'St. Lawrence.'*

At the beginning of the fiscal year 1903-04, the dredge 'St. Lawrence' was at Pictou, N.S., waiting orders. It proceeded to Richibucto, where it began operations on the bar at the entrance to the harbour of Richibucto, in Kent county, N.B., on July 7, and continued until November 16, opening a channel 100 feet wide, 15 feet deep, through the Reef and Jib Sheet shoal. The above work being completed and the weather stormy, the dredge was ordered to Pictou, where it went into winter quarters on the marine slip, and during the winter had necessary repairs and renewals made to the hull, boiler, engines and dredging machinery; the hull was cleaned and painted, and was ready to launch when the ice in the harbour permitted. On receipt of orders the crew were shipped and dredging commenced at the Intercolonial Coal Mining Company's pier, at Skinner's or Abercrombie point, on the East river, Pictou

4-5 EDWARD VII., A. 1905

county, where it was engaged from May 17 to June 2, and again from June 8 to 10, and 3 to 7, 1904, and from June 11 to 24, was engaged improving the channel from the main channel into the Harbour Commissioners' wharf, known as the Market wharf, and from June 25 to 30, 1904, it was engaged improving the bar at the entrance to Pictou harbour, to 19 feet at low water spring tides, vigorously pushing the work at the close of the fiscal year.

*The Dredge 'Canada.'*

At the beginning of the fiscal year 1903-04, the dredge 'Canada' was operating on the bar and channel at Liverpool, Queen's county, N.S., where it continued until August 31, completing the channel through the bar, and the harbour to 13 feet at low water spring tides. From September 1 to December 15, the dredge was engaged at Barrington, Shelburne county, N.S., deepening and improving the Sherrow channel to 12 feet. At the latter date, under orders, it proceeded to Yarmouth, to winter and repair. During the winter and early spring, the necessary extensive repairs were made on the marine slip, hull painted, dredge launched, crew shipped, and alternately, as the tide answered, the dredge operated at the marine slip, and in the channel, in front of the steamboat wharfs, in Yarmouth, from June 17 to 30, 1904, when it was under orders to return to Barrington to resume work there.

*The Dredge 'New Dominion.'*

At the commencement of the fiscal year 1903-04, this dredge was operating on the Grand Lake Flats, Queen's county, N.B., and continued there until September 6, 1903, when under orders it was removed to Newcastle, Queen's county, and dredged a channel through a bar for the Queen's Coal Company until September 19, when it returned to the Grand Lake Flats and resumed work there, and by October 16 it completed the channel 8,875 feet in length, 75 feet wide, 10 feet deep, from the head of the Jemseg river, into deep water, in the Grand lake. The dredge was ordered to return to Newcastle to dredge a basin for the Queen's Coal Company, which was done, and by November 2, the channel through the sand bar and a basin inside, were completed, enabling vessels to ship coal. The dredge was now ordered to Gagetown, where it was employed from November 3 to 6, removing a point at the entrance to the Gagetown creek. This work being completed and the weather bad, the dredge was ordered to St. John for winter quarters. Repairs to mud scows were immediately commenced and completed January 28, 1904, when the dredge was ordered to work at the winter port wharfs, for the city of St. John. The dredge and plant were immediately made ready, and the work continued from January 28 to June 30, except when employed from April 13 to May 12, dredging a basin in front of the Intercolonial Railway wharf at York Point.

*The Dredge 'Prince Edward.'*

On July 1, 1903-04, this dredge was operating at Halliday's wharf, Belfast, Queen's county, Prince Edward Island, and continued there until August 13, when work was completed and the dredge removed to the Vernon river bridge, where it worked from August 14 until September 10, improving the channel and berths at the wharf, when the dredge removed to Morrell, St. Peter's bay, Kings county, Prince Edward Island, where it operated from September 11 to November 27, opening a channel through the bar. At the last mentioned date the weather being bad and ice making, a basin was prepared at the public wharf, at the head of St. Peter's bay, and the dredge and scows placed in winter quarters there. During the winter and spring, the necessary repairs were made to dredge, hull and machinery, and scows by May 13, when dredging was resumed at Morrell, and was being vigorously prosecuted at the close of fiscal year 1903-04.

## SESSIONAL PAPER No. 19

*The Dredge 'George McKenzie.'*

At the beginning of the fiscal year 1903-04, this dredge was operating at Mabou, Inverness county, N.S., improving the channel at that place to ten feet at low water spring tides, and finishing there on August 24, 1903, it proceeded to Port Hood and there improved the channel near the coal piers of the Port Hood Coal Company, at the public wharf, and Smith's wharf until October 1, when the dredge was removed to Eastern harbour, Cheticamp, in the same county, where it operated, weather permitting, until November 27, when it was placed in winter quarters. During the winter and spring the dredge's hull and machinery and scows were put in order and ready for work. In the spring of 1904, dredging was resumed at Cheticamp and was in progress at the close of the fiscal year.

*The Dredge 'Cape Breton.'*

At the opening of the fiscal year 1903-04, this dredge operating at Point du Chene in Westmorland county, New Brunswick, continuing there until July 17, when it completed the channel out to the range lights at the harbour entrance. The dredge was transferred to Caraquet, in Gloucester county, New Brunswick, where dredging to 22 feet at low water spring tides was done to prepare the foundation of a new wharf; also in deepening the water around the old wharf at that place, all of which was completed by September 15. The dredge was then removed to Neguac, Northumberland county, New Brunswick, and continued there until November 2, when 6,300 yards had been removed, and owing to having encountered rock the machinery was broken, and the work stopped. The season being late and the dredge and barges requiring to go on the marine slip for repairs, the plant was removed to Pictou, and necessary repairs completed. From May 25 to June 3, the dredge was engaged improving the depth of water at the Acadia Coal Company's loading piers at Pictou landing in Pictou harbour, Nova Scotia, and from June 4 to 14, in opening a channel from the main channel to Hogg, Craig & Co.'s wharf at Pictou, and June 15 and 16, giving greater depth to water at Burham & Morrell's wharf at Pictou, and from June 17 to 22, in operating at the Intercolonial Railway wharf at Pictou landing in Pictou harbour. Then from June 23 to 30, at the Harbour Commissioner's wharf (known as Market wharf) at Pictou, when the plant was removed to Eastern harbour, Cheticamp, Inverness county, Nova Scotia.

*The Dredge 'New Brunswick.'*

At the beginning of the fiscal year 1903-04, this dredge was operating on the Russell bar, St. John river, York county, New Brunswick, and continued work there until August 5, when the water was getting too low on the bar, the dredge and plant were removed to Gagetown canal, Queen's county, New Brunswick, where it operated from August 6 to 16, and then removed to the Oromocto shoal in Sunbury county, New Brunswick, where it operated from August 17 to November 5, when it returned to Gagetown and dredged from November 6 to 14 in further improving the channel there. The plant was then removed to St. John, into winter quarters there. The dredge was made ready, and on February 18, 1904, began dredging for the winter port improvements, St. John Harbour, which it continued until June 30, when the dredge was ordered to work on the Washademoak, on the St. John river.

*The Tug 'Cricket.'*

This tug attended and served the dredge 'New Brunswick' during the year, except while the dredge operated at the winter port berths for the city of St. John; the dredge was then attended to by the Messrs. Tapleys' tugs, and for a time by tug 'Rona.'

4-5 EDWARD VII., A. 1905

*The Tug 'Rona.'*

The tug 'Rona,' a new tug purchased by the department, was fitted out and attended the dredge 'New Brunswick' at the winter port work from March 14 until May 14, when it joined the dredge 'Geo. McKenzie' at Cheticamp and is proving to be a good vessel for the service.

Memorandum of quantities removed by the several dredges in the maritime provinces during the fiscal year 1903-1904:—

	Cubic Yards.
'St. Lawrence'.....	51,100
'Canada'.....	33,210
'New Dominion'.....	111,175
'Prince Edward'.....	49,500
'Geo. McKenzie'.....	19,150
'Cape Breton'.....	54,845
'New Brunswick'.....	77,920
Fowlie's dredge.....	1,205
	<hr/>
	398,105

## DREDGE VESSELS REPAIRS AND WINTERING, ETC.

*Maritime Provinces.*

The following amounts were expended on repairs and renewals to dredges and plant, during the year 1903-1904:—

'St. Lawrence'.....	\$ 4,272 63
'Canada'.....	7,547 86
'New Dominion'.....	2,084 59
'Prince Edward'.....	2,934 85
'Geo. MacKenzie'.....	1,613 90
'Cape Breton'.....	3,841 57
'New Brunswick'.....	738 62
Tug 'Cricket'.....	378 08
" 'Rona'.....	31 64
	<hr/>
	\$23,443 74

## NEW DREDGING PLANT.

Tug 'Rona'.....	\$ 2,577 72
-----------------	-------------

## DREDGING PLANT.

The following is a summary description of the dredging plant owned and operated by the Public Works Department in the Maritime provinces :—

*The self-propelling Elevator Dredge 'St. Lawrence' (iron hull).*

Length over all—175 feet.

Beam—30 feet.

Draft when loaded aft—13.5 feet.

Draft when loaded forward—8.5 feet.

Least working depth (ladder with 32 buckets dropped 30 feet from bow) 8.5 feet.

Greatest working depth (bucket ladder dropped 40 feet from bow)—28 feet.

Capacity of hopper for spoil material—350 cubic yards.

Speed when light—6 to 7 miles per hour.

Speed when loaded—3 to 4 miles per hour.

Daily rate of dredging hard material—350 to 700 cubic yards.

“ “ ordinary earth—750 to 1,000 cubic yards.

“ “ soft material—1,050 to 1,400 cubic yards.

*The self-propelling Elevator Dredge 'Canada' (iron hull).*

Length over all—130 feet.

Beam—20 feet.

Draft when loaded aft—11.5 feet.

Draft when loaded forward—7 feet.

Least working depth—7 feet.

Greatest working depth (ladder, 24 buckets)—16 feet.

Capacity of hopper for spoil material—90 cubic yards.

Speed when light and newly painted—6 to 7 miles per hour.

Speed when loaded—3 to 4 miles per hour.

Daily rate of dredging in hard bottom—180 to 270 cubic yards.

“ “ with ordinary digging—180 to 360 cubic yards.

“ “ in soft material—360 to 450 cubic feet.

*The Spoon Dredge 'New Dominion' (wooden hull).*

Length over all—90 feet.

Width—28 feet.

Draft—5½ feet.

Greatest working depth—21 feet.

Daily rate of dredging in hard material—300 cubic yards.

“ “ with ordinary material—450 cubic yards.

“ “ in soft material—600 to 700 cubic yards.

Number of dump scows or barges used—4 (2 are condemned).



4-5 EDWARD VII., A. 1905

*The Spoon Dredge 'Prince Edward' (wooden hull).*

Length over all—80 feet.

Width—28 feet.

Draft—6 feet.

Greatest working depth—21 feet.

Daily rate of dredging in hard material—300 cubic yards.

“ “ with ordinary material—500 cubic yards.

“ “ in soft material—600 to 700 cubic yards.

Number of dump scows or barges used—3.

*The Spoon or Dipper Dredge 'George McKenzie' (wooden hull).*

Length—90 feet.

Width—28 feet.

Draft—6 feet.

Greatest working depth—22 feet.

Daily rate of dredging in hard material—350 cubic yards.

“ “ with ordinary material—500 cubic yards.

“ “ in soft material—600 cubic yards.

Number of dump scows or barges used—3.

*The Boom and Dipper Dredge 'Cape Breton' (steel hull).*

Length—91 feet.

Beam—36 feet.

Draft—7½ feet.

Greatest working depth—34 feet.

Daily rate of dredging hard material—1,000 cubic yards.

“ “ ordinary material—1,500 cubic yards.

“ “ soft material—2,000 cubic yards.

Number of barges used (each of 210 cubic yards capacity—steel)—2.

*The Clam Shell Dredge 'New Brunswick' (wooden hull).*

Length over all—90 feet.

Width—25 feet.

Draft—2½ feet.

Greatest working depth—17 feet.

Daily rate of dredging in hard material—180 cubic yards.

“ “ ordinary material—300 cubic yards.

“ “ soft material—450 cubic yards.

Number of decked scows used—3.

*Tug 'Cricket.'*

Length—36.5 feet.

Beam—7.3 feet.

Draft—3.10.

Horse power—4.

SESSIONAL PAPER No. 19

*Tug 'Rona.'*

Length—85 feet.

Beam—19·3 feet.

Draft—8 feet.

Horse power—25.

One pile-driver, engine and boiler fitted on scow.

One stone lifter, engine and large grips (no boiler).

4-5 EDWARD VII., A. 1905

## CLASSIFICATION OF Disbursements of the Dredges in the Maritime Provinces during the Year ending June 30, 1904.

DREDGE 'ST. LAWRENCE.'

ITEMS.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Total.
	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.	% cts.
Wages. . . . .	483 33	483 33	549 00	483 33	489 56	483 33	466 55	262 33	262 33	262 33	486 91	561 33	5,273 66
Coal. . . . .	135 00	735 00	.....	345 00	30 00	.....	.....	.....	126 05	.....	174 38	320 62	1,866 05
Provisions . . . .	145 64	136 67	109 49	145 52	100 66	148 79	128 11	.....	.....	.....	179 37	148 48	1,242 73
Stores. . . . .	6 00	.....	.....	27 09	12 88	61 71	.....	.....	35 40	.....	61 59	2 00	206 67
Equipment. . . .	197 02	.....	.....	.....	.....	.....	.....	.....	53 62	223 67	.....	.....	474 31
Water. . . . .	5 30	.....	.....	29 00	18 00	.....	.....	.....	4 00	.....	.....	.....	56 30
Repairs. . . . .	194 45	27 30	.....	.....	165 35	3 05	27 35	159 56	636 97	328 30	819 91	17 78	2,400 02
Pilotage. . . . .	60 00	78 00	.....	81 00	66 00	.....	.....	.....	.....	.....	.....	.....	285 00
Towage. . . . .	10 00	.....	.....	10 00	10 00	.....	.....	.....	.....	.....	18 00	31 00	30 00
Wharfage. . . . .	20 00	.....	.....	.....	134 00	8 25	.....	.....	.....	.....	.....	.....	211 25
Contingencies . .	12 42	5 02	2 35	.....	7 17	8 25	.....	2 35	14 15	5 28	.....	9 01	66 03
Totals. . . . .	1,269 16	1,465 32	660 84	1,120 94	1,033 62	713 38	622 01	424 24	1,152 52	819 58	1,740 16	1,000 25	12,112 02
Working expenses .	1,074 71	1,438 02	660 84	1,120 94	808 27	227 00	Nil.	Nil.	233 22	223 67	920 25	1,072 47	7,889 39
Repairs ordinary .	Nil.	27 30	Nil.	Nil.	165 35	Nil.	622 01	424 24	4 38	Nil.	703 75	17 78	918 56
" extraordinary .	194 45	Nil.	Nil.	Nil.	Nil.	486 38	.....	.....	914 92	595 91	116 16	Nil.	3,354 07
Totals. . . . .	1,269 16	1,465 32	660 84	1,120 94	1,033 62	713 38	622 01	424 24	1,152 52	819 58	1,740 16	1,000 25	12,112 02

## SESSIONAL PAPER No. 19

## DREDGE, CANADA.

Wages.....	478 46	430 48	426 85	430 00	428 50	385 85	222 00	278 25	367 25	283 37	370 18	456 20	4,557 48
Coal.....	255 35	367 35	500 00	5 00	5 00	91 55						130 13	1,349 38
Provisions.....	98 15	105 80	87 48	88 75	74 43	65 60					72 79	116 21	709 27
Stores.....	4 99	14 38		11 60	5 73	16 17		1 63			98 51	169 73	322 74
Equipment.....	4 50								48 12		24 68	97 72	174 42
Water.....	5 00	5 00	14 90	15 00	20 18	7 50							67 38
Repairs.....	16 38	37 06	44 00	54 00	50 00	185 11	33 79	128 16	472 53	142 38	545 91	4,901 55	6,462 87
Pilotage.....						35 50			10 00				219 50
Towages.....	15 00	15 00										10 00	20 00
Wharfage.....	62 43	4 00	10 02	3 20	1 90	5 41		2 49	13 45		8 68		30 00
Contingencies.....												7 70	125 02
Totals.....	940 26	1,015 13	1,083 25	607 64	580 74	792 69	260 94	410 53	911 85	425 75	1,120 15	5,889 33	14,038 26
Working expenses.....	923 88	978 07	1,083 25	607 64	580 74	607 58	13 94	N 1	133 28	N 1	574 24	987 78	6,490 40
Repairs, ordinary.....	16 38	N 1	N 1	N 1	N 1	4 77	N 1	N 1	N 1	N 1	343 83	4,901 55	5,366 63
" extraordinary.....	N 1	37 06	N 1	N 1	N 1	180 34	247 00	410 53	778 57	425 75	202 08	N 1	2,281 73
Totals.....	940 26	1,015 13	1,083 25	607 64	580 74	792 69	260 94	410 53	911 85	425 75	1,120 15	5,889 33	14,038 26

## DREDGE, NEW DOMINION.

Wages.....	367 33	370 00	369 62	358 15	339 83	526 20	518 11	405 02	387 57	409 64	509 03	380 55	4,942 05
Coal.....			194 75		298 03		19 72	60 00	90 00	144 03	154 65	142 60	1,084 07
Provisions.....	80 63	94 06	80 36	54 58	21 48		7 04	74 20	125 74	89 20	92 61	100 52	833 79
Stores.....			3 84					24 06	47 06			15 00	97 00
Equipment.....									204 89		59 14		264 03
Water.....		12 00							102 00		108 50	68 38	290 88
Repairs.....		9 51	2 64	14 35	35 82	273 75	245 82	187 05	11 31	129 50	113 40	115 83	1,138 99
Pilotage.....													
Towage.....	520 00	530 60		1,120 00	370 00			447 00	705 00	739 00	651 00	780 00	5,862 00
Wharfage.....													
Contingencies.....	0 27		2 37	0 29	6 85	2 87	0 30	0 66	0 52	1 00		6 82	21 35
Totals.....	968 23	1,016 17	644 58	1,547 37	1,072 02	802 82	790 99	1,198 08	1,674 09	1,512 37	1,688 34	1,619 70	14,534 76
Working expenses.....	968 23	1,006 66	642 21	1,533 02	1,004 69	8 87	213 91	986 01	1,656 03	1,351 73	1,574 94	1,503 87	12,450 17
Repairs, ordinary.....	N 1	N 1	2 37	N 1	N 1	N 1	20 00	N 1	N 1	59 80	113 40	115 83	311 40
" extraordinary.....	N 1	9 51	N 1	14 35	67 33	793 95	557 08	212 07	18 06	100 84	N 1	N 1	1,773 19
Totals.....	968 23	1,016 17	644 58	1,547 37	1,072 02	802 82	790 99	1,198 08	1,671 09	1,512 37	1,688 34	1,619 70	14,534 76

4-5 EDWARD VII., A. 1905

CLASSIFICATION of Disbursements of Dredges in the Maritime Provinces, &c.—Continued.  
DREDGE 'PRINCE EDWARD.'

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	395 00	391 07	401 50	385 00	385 00	264 36	150 00	183 28	325 74	690 08	748 94	429 40	4,749 46
Coal.....			6 50	119 30	85 87	7 75		177 80	2 70	11 00		98 49	508 91
Provisions.....		61 28	294 31	10 86	152 68	70 46					18 00	227 87	745 96
Stores.....			17 69										17 69
Equipment.....			41 84			99 46				142 40			283 70
Water.....			118 65	67 80	52 50						39 70	64 95	343 60
Repairs.....				9 85	27 00	61 32		273 46	168 69	3 25	135 56	896 97	1,576 10
Pilotage.....			35 00		52 00								87 00
Towage.....	650 00	637 50	1,215 00	550 00	550 00						362 50	650 00	4,615 00
Wharfage.....													
Contingencies.....			8 75	44 74	20 43		6 95		10 80	6 25	2 62	40 45	140 99
Totals.....	1,045 00	1,089 85	2,049 33	1,187 55	1,324 98	503 85	156 95	634 54	507 93	852 98	1,307 32	2,408 13	13,068 41
Workings expenses.....	1,045 00	1,089 85	2,049 33	1,177 70	1,297 98	442 53	Nil.	177 80	10 80	159 65	1,171 76	1,511 16	10,133 56
Repairs, ordinary.....	Nil.	Nil.	Nil.	Nil.	27 00	61 32	Nil.	Nil.	Nil.	Nil.	135 56	896 97	1,120 85
" extraordinary.....	Nil.	Nil.	Nil.	9 85	Nil.	Nil.	156 95	456 74	497 13	693 33	Nil.	Nil.	1,814 00
Totals.....	1,045 00	1,089 85	2,049 33	1,187 55	1,324 98	503 85	156 95	634 54	507 93	852 98	1,307 32	2,408 13	13,068 41

## SESSIONAL PAPER No. 19

## DREDGE "GEO. MCKENZIE."

Wages.....	474 25	393 69	395 34	389 73	393 75	280 15	155 00	152 50	355 21	441 49	336 47	474 50	4,252 08
Coal.....	47 79	85 56		164 00	75 00	43 48						308 70	633 26
Provisions.....		132 87	119 92	60 22	55 38						100 02	87 02	646 70
Stores.....			5 60	21 16	3 69		8 30				76 51		115 26
Equipment.....	161 68			258 45	102 00						109 00		469 13
Water.....		51 00	37 41	42 00									232 41
Repairs.....				5 76				12 93	88 73	297 52		6 00	495 14
Pilotage.....	7 00												7 00
Towage.....	1 110 00	650 00	200 00	1,425 00	625 00							270 00	4,280 00
Wardage.....	20			16 46									20
Contingencies.....	13 42	9 48	7 51		39 31	7 45	91		4 63	72	18 59	1 89	120 37
Totals.....	1,754 34	1,822 60	765 78	2,392 78	1,219 13	490 28	164 21	165 43	448 57	739 73	640 59	1,148 11	11,251 55
Working expenses.....	1,754 34	1,822 60	765 78	2,387 02	1,219 13	406 08					640 59	1,142 11	9,637 65
Repairs, ordinary.....				5 76		3 80						6 00	15 56
" extraordinary.....						80 40	164 21	165 43	448 57	739 73			1,698 34
Totals.....	1,754 34	1,822 60	765 78	2,392 78	1,219 13	490 28	164 21	165 43	448 57	739 73	640 59	1,148 11	11,251 55

## DREDGE "CAPE BRETON."

Wages.....	435 00	423 97	423 97	423 98	427 26	403 77	140 00	160 00	179 94	255 00	310 41	482 80	4,017 13
Coal.....	180 55	567 77	567 77	112 50	221 75	120 43			23 31		92 43	1,900 47	1,900 47
Provisions.....	163 35	8 00	240 73	2 90	166 86	4 10		15 63			105 99	107 33	971 08
Stores.....					10 00			7 50	27 01		72 68		286 28
Equipment.....	33 00				30 00				43 58	147 90		191 32	400 30
Water.....	22 50	27 00				521 46		59 39	176 33	487 09	35 86	22 50	135 00
Repairs.....	13 09											1,383 52	2,686 74
Pilotage.....	25 00			20 00				300 00			13 00	905 00	45 00
Towage.....	800 31	1,140 63		1,225 00	2,905 00	214 93	25 00				24 00		7,988 87
Wardage.....						6 58		5 46	8 15		9 55		24 00
Contingencies.....	2 00	9 16		21 16								7 18	69 24
Totals.....	1,649 81	1,989 95	1,259 47	1,805 54	3,750 87	1,281 27	165 00	547 98	458 32	889 99	643 92	3,261 99	17,724 11
Working expenses.....	1,639 81	1,976 86	1,259 47	1,805 54	3,750 87	356 04	25 00	323 13	91 39	147 90	628 06	1,878 47	13,882 54
Repairs, ordinary.....	10 00							224 85			35 86	1,383 52	1,429 38
" extraordinary.....		13 09				925 23	140 00		306 93	742 09			2,412 19
Totals.....	1,649 81	1,989 95	1,259 47	1,805 54	3,750 87	1,281 27	165 00	547 98	458 32	889 99	643 92	3,261 99	17,724 11

4-5 EDWARD VII., A. 1905

## CLASSIFICATION of Disbursements of Dredges in the Maritimes Provinces, &amp;c.—Continued.

## DREDGE 'NEW BRUNSWICK'.

Item.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Total.
	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.	£ cts.
Wages.....	477 47	435 40	365 14	391 98	311 50	110 00	143 77	246 19	350 63	376 00	336 82	420 51	3,965 41
Coal.....	125 37	69 43	139 83	.....	.....	.....	55 54	55 54	181 25	142 59	142 59	118 21	831 72
Provisions.....	210 00	175 07	147 43	164 57	121 28	.....	.....	13 70	60 06	163 99	152 86	81 05	1,290 01
Stores.....	9 60	.....	.....	6 07	4 51	.....	2 00	43 64	0 45	42 78	42 65	21 03	172 73
Equipment.....	42 50	.....	.....	12 50	.....	.....	.....	.....	129 57	.....	.....	.....	184 57
Water.....	.....	12 50	.....	.....	.....	.....	5 00	.....	72 50	.....	83 88	45 63	219 51
Repairs.....	.....	.....	.....	4 43	.....	41 40	14 35	172 89	69 12	30 33	33 62	85 39	452 73
Pilotage.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Towage.....	.....	140 00	809 45	540 00	343 30	.....	.....	111 00	160 00	27 50	361 50	561 00	3,053 75
Wharfage.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contingencies.....	11 80	3 75	.....	.....	5 37	3 93	2 05	.....	.....	.....	.....	3 80	30 70
Totals.....	876 74	836 15	1,461 35	1,119 55	785 96	155 33	167 77	642 96	1,023 58	641 20	1,153 92	1,336 62	10,201 13
Working expenses.....	876 74	836 15	1,461 35	1,115 12	785 96	113 33	9 05	455 25	868 41	569 02	1,120 30	1,251 23	9,462 51
Repairs, ordinary.....	Nil.	Nil.	Nil.	Nil.	Nil.	41 40	Nil.	Nil.	Nil.	28 14	33 62	85 39	188 55
" extraordinary.....	Nil.	Nil.	Nil.	4 43	Nil.	Nil.	158 72	187 71	155 17	44 04	Nil.	Nil.	550 07
Totals.....	876 74	836 15	1,461 35	1,119 55	785 96	155 33	167 77	642 96	1,023 58	641 20	1,153 92	1,336 62	10,201 13

## SESSIONAL PAPER No. 19

## TUG 'CRICKET.'

19 Wages.....	107 96	85 00	81 42	85 00	86 46	51 75			11 88	539 41
17 Coal.....	22 40	165 56	131 25	26 57	22 28					319 21
17 Provisions.....	39 00	39 86	24 86	3 40						152 57
17 Stores.....	6 19	3 70								13 29
17 Equipment.....										
13 Water.....										
Repairs.....				23 96						
Photage.....										
Towage.....										
Wharfage.....										
Contingencies.....					1 35					
Totals.....	175 49	294 12	237 53	138 93	110 09	Nil.	Nil.	92 80	69 15	1,341 86
Working Expenses.....	175 49	294 12	237 53	114 97	99 09	Nil.	Nil.	Nil.	42 58	963 78
Repairs, ordinary.....	Nil.	Nil.	Nil.	Nil.	Nil.			Nil.	26 57	196 59
" extraordinary.....	Nil.	Nil.	Nil.	23 96	11 00			92 80	Nil.	181 49
Totals.....	174 49	294 12	237 53	138 93	110 09	Nil.	Nil.	92 80	69 15	1,341 86

## TUG 'IRONA.'

Wages.....										767 22
Coal.....										123 17
Provisions.....										226 05
Stores.....										42 13
Equipment.....										28 89
Water.....										34 41
Repairs.....										
Photage.....										
Towage.....										
Wharfage.....										
Contingencies.....										
Totals.....	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	3 00	5 87	1,537 89
Working expenses.....										
Repairs, ordinary.....										1,506 25
" extraordinary.....										Nil.
Totals.....	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	31 64	379 37	31 64







## CLASSIFICATION AND QUANTITIES OF Material removed by Dredges in the Maritime Provinces, &amp;c.—Continued.

## DREDGE 'CAPE BRETON.'

Description of Material Dredged.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Total.
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Sand and shells.....	840		840								1,785	1,260	1,680
Clay, rock and sand.....											3,570	16,310	3,045
Clay.....													19,880
Sand and ledge.....				6,300									6,300
Clay and sand.....		6,300											6,300
Sand—and mud.....	2,100		4,410										6,510
Sand—ashes.....	3,360	4,365	630										9,135
Mud.....	1,995											840	1,995
Totals.....	8,295	10,665	5,880	6,300							5,355	18,410	54,845

## 4-5 EDWARD VII., A. 1905

## DREDGE 'NEW BRUNSWICK.'

Rock and Gravel.....	3,185	665			5,850								3,850
Sand and mud.....	1,710				450								5,850
Gravel.....		2,320											1,710
Clay.....								840	4,250	3,300	1,100		3,870
Clay and ledgings.....													8,390
Sand—ordinary.....		7,370	15,785	16,830	875								40,860
Sand—and sawdust.....				1,750									1,750
Mud, sticks, logs & rock.....					320				1,050	1,450	3,350	5,470	11,640
Totals.....	4,895	10,355	15,785	18,580	7,495			840	5,300	4,750	4,450	5,470	77,920

## SESSIONAL PAPER No. 19

DREDGE 'F. A. FOWLES DREDGE.'

Mud and stone, 10

1,205

4-5 EDWARD VII., A. 1905

## DETAILS OF DREDGING IN THE MARITIME PROVINCES.

For the Fiscal Year ended June 30, 1904.

Dredge.	Locality.	Date.	Time Dredging.	Quantity, Cubic Yards.	Expendi- ture at Locality.		Per Cubic Yard for Local Expendi- ture.		Wintering, Repairs, Equipment and Superintendence, <i>pro rata</i> .		Total Cost.		Per Cubic Yard for Total Expendi- ture.	
					% cts.	cts.	% cts.	cts.	% cts.	cts.	% cts.	cts.	% cts.	cts.
St. Lawrence.	Richibucto, Ken's Co., N.B.	July 7 to Nov 16, 1903.	183	32,550	4,006	39	0	14	4,036	43	9,542	82	0	29
	Skinner's Point, New Pier, Pictou, Pictou Co., N.S.	May 17 to June 2 and June 8 to 10, 1904	53	7,700	762	84	0	09	817	48	1,580	32	0	20
Canada	Main Channel to Market Wharf, Pictou Co., N.S.	June 3 to 7 and June 11 to 24 1904.	44	9,100	626	98	0	06	671	91	1,298	89	0	14
	Pictou Bar, Pictou Co., N.S.	June 25 to 30, 1904	6	1,750	166	63	0	09	178	57	345	20	0	19
	Liverpool, Queen's Co., N.S.	July 1 to August 31, 1903	163	11,610	1,833	85	0	15	3,108	23	4,942	08	0	42
	Barrington, Shelburne Co., N.S.	Sept. 1 to Dec. 15, 1903	236	19,440	3,240	40	0	16	5,492	36	8,732	85	0	44
	Steuart Wharf, Yarmouth, Yarmouth Co., N.S.	June 17 to 30, 1904 alternately.	13	720	138	88	0	19	235	39	374	27	0	51
New Dominion	Marine Slip Yarmouth, Yarmouth Co., N.S.	June 17 to 30, 1904	24	1,440	277	76	0	19	470	71	748	47	0	51
	Grand Lake Flats, Queen's Co., N.B.	July 1 to Sept. 6 and Sept. 20 to Oct. 16, 1903.	672	48,625	3,780	39	0	07	977	39	4,757	78	0	09
	Queens Coal Co., Queen's Co., N.B.	Sept. 7 to 19 and Oct. 17 to Nov. 2, 1903.	196	14,475	1,060	80	0	07	274	26	1,335	06	0	09
	Wagtown, Queen's Co., N.B.	Nov. 3 to 6, 1903.	76	5,475	536	81	0	09	138	70	675	63	0	12
	Winter Berths St. John, St. John Co., N.B.	Jan. 28 to April 12 and May 13 to June 30, 1904.	474	32,950	5,046	07	0	15	1,304	62	6,350	69	0	19
Prince Edward.	Intercolonial Ry. St. John Co., N.B.	April 13 to May 12, 1904	152	9,650	1,749	55	0	18	452	33	2,201	88	0	22
	Hallidays Wharf, Queen's Co., P.E.I.	July 1 to Aug. 13, 1903.	274	13,365	1,890	29	0	14	1,054	25	2,944	54	0	22
	Vernon River Bridge, Co., P.E.I.	Aug. 14 to Sept. 10, 1903.	177	7,380	1,262	00	0	17	763	83	1,965	83	0	26
	Morrell, King's Co., P.E.I.	Sept. 11 to Nov. 27, 1903 and May 14 to June 30, 1904.	648	28,755	5,690	07	0	19	3,174	03	8,865	00	0	30
Geo. McKenzie.	Maibou, Inverness Co., N.S.	July 1 to Aug. 24, 1904	152	5,405	2,675	38	0	49	1,163	28	3,840	26	0	71
	Port Hood, Inverness Co., N.S.	Aug. 25 to Oct. 1, 1904	98	2,970	1,447	48	0	48	629	20	2,077	18	0	69
	Eastern Harbour, Cheticamp, N.S.	Oct. 2 to Nov. 27, 1903 and May 25 to June 30, 1904.	285	10,775	4,555	96	0	42	1,979	80	6,535	76	0	66

## SESSIONAL PAPER No. 19

Cape Breton.....	Point du Cluene, Westmorland Co., N. B.	July 1 to 17, 1903	49	15	8,295	854 39	0 10 29	850 46	1,704 76	0 20 55
	Caraquet, Gloucester Co., N. B.	July 18 to Sept. 15, 1903	84	15	16,485	3,163 23	0 19 18	3,149 00	6,312 23	0 38 29
	Neguaque, Northumberland Co., N. B.	Sept. 16 to Nov. 2, 1903	49	30	6,300	3,192 73	0 55 14	3,477 03	6,969 76	1 10 63
	Acadia Coal Pier, Pictou, Pictou Co., N. S.	May 25 to June 3, 1904	43	75	8,400	456 38	0 05 43	454 33	910 71	0 10 84
	Hogg, Craig & Co. Wharf, Pictou, Pictou Co., N. S.	June 4 to 14, 1904	29	00	6,090	603 50	0 09 31	600 79	1,204 29	0 19 77
	Barnham & Morrill Pictou, Pictou Co., N. S.	June 15 and 16, 1904	5	00	1,450	105 83	0 10 08	105 36	211 19	0 16 90
	Intercolonial Ry. Wharf, Pictou, Pictou Co., N. S.	June 17 to 22, 1904	18	00	3,395	287 63	0 08 47	286 39	574 08	0 16 90
	Market Wharf, Pictou, Pictou Co., N. S.	June 23 to 30, 1904	23	00	4,880	398 85	0 08 25	397 05	795 90	0 16 47
	Russell Bay, York Co., N. B.	July 1 to Aug. 5, 1903	163	30	5,560	1,292 61	0 22 16	353 01	1,585 62	0 28 51
	Cagetown Wharf & Canal, Queen's Co., N. B.	Aug. 6 to 16 and Nov. 6 to 14, 1903	118	00	6,870	851 49	0 12 40	243 86	1,005 35	0 15 96
	Oronocto Shoals Sundry Co., N. B.	Aug. 17 to Nov. 5, 1903	614	30	44,360	3,536 20	0 08 01	1,018 47	4,574 67	0 10 31
	Winter Berths, St. John, St. John Co., N. B.	Feb. 18 to June 30, 1904	561	45	21,130	4,617 45	0 21 85	1,322 42	5,939 87	0 28 11
			5630	18	396,900	60,971 91	0 15 36	40,021 03	100,992 94	0 25 44

Fowle's Dredge, Neguac, Northumberland Co., N. B., June to 30, 1904, 1,205 yds.

4-5 EDWARD VII., A. 1905

## EXPENDITURE for dredging in Nova Scotia for the Thirty-two years ended June 30, 1904.

County:	Locality.	TOTAL FOR THE THIRTY-ONE YEARS ENDED JUNE 30, 1903.				FOR THE YEAR 1903-04.				Total quantity, Cubic yards.	Total cost.		Cost for each County.
		Quantity, Cubic yards.	Cost.	Cost for County.	Quantity, Cubic yards.	Cost.	Cost for County.		% cts.		Total cost.		
							% cts.	% cts.			% cts.	% cts.	
Antigonish.....	Antigonish .....	22,025	3,649 15						22,025	3,649 15			
	Harbour Au Bonchee.....	59,243	19,703 33						59,243	19,703 33			
	Tracadie.....	12,245	5,530 20						12,245	5,530 20			
	McNair's Cove.....	11,265	10,035 68						11,265	10,035 68			
	Bayfield.....	12,871	9,505 79						12,871	9,505 79			
Annapolis Cape Breton.....	Arnsaig.....	8,330	7,452 26						8,330	7,452 26			
	Cribbin's Point.....	4,675	4,125 19	60,001 69					4,675	4,125 19	60,001 69		
	Annapolis.....	2,825	1,635 68	1,635 68					2,825	1,635 68	1,635 68		
	Lingan.....	22,297	9,275 56						22,297	9,275 56			
	Sydney.....	62,917	20,904 88						62,917	20,904 88			
Colchester Cumberland Digby Guysboro.....	Little Glace Bay.....	46,450	16,936 02						46,450	16,936 02			
	Port Caledonia.....	17,413	8,242 21						17,413	8,242 21			
	Bancroft Pond.....	20,800	5,993 90						20,800	5,993 90			
	Christmas Island.....	19,045	3,364 98						19,045	3,364 98			
	Cow Bay.....	3,255	1,892 32						3,255	1,892 32			
	Main A Dieu.....	4,680	2,720 76						4,680	2,720 76			
	Louisbourg.....	22,310	5,480 52						22,310	5,480 52			
	North Sydney (Coal & Steel Co) (Salter's Wharf).....	15,190	6,648 45						15,190	6,648 45			
	".....	630	315 01	81,774 61					630	315 01	81,774 61		
	Tatamagouche.....	65,480	20,373 07	20,373 07					65,480	20,373 07	20,373 07		
Digby Guysboro.....	Parrsboro.....	42,595	12,804 68						42,595	12,804 68			
	Wallace.....	93,865	24,140 37	36,945 65					93,865	24,140 37	36,945 65		
	Digby.....	35,740	11,069 10						35,740	11,069 10			
	Weymouth.....	88	28 62	11,037 72					88	28 62	11,037 72		
	Guysboro.....	5,400	1,413 53						5,400	1,413 53			
Digby Guysboro.....	Larry's River.....	47,655	16,519 85						47,655	16,519 85			
	Port Mulgrave.....	4,347	2,494 81						4,347	2,494 81			
	Sherbrooke.....	1,290	496 49						1,290	496 49			
	Cook's Cove.....	16,815	7,336 29						16,815	7,336 29			
	St. Mary's River.....	81,812	22,352 04						81,812	22,352 04			
Digby Guysboro.....	Tickle Passage, Little Canso.....	3,015	4,477 97						3,015	4,477 97			
	Bar Sonora, St. Mary's River.....	5,628	2,204 33	57,295 31					5,628	2,204 33	57,295 31		







## SESSIONAL PAPER No. 19

Murray River	41,062	11,433 61				41,062	11,433 61
" Railway	5,926	1,860 30				5,926	1,860 30
Queen's Charlottetown	86,151	22,162 30				86,151	22,162 30
Powall	14,193	2,963 50				14,193	2,963 50
Ferry	10,975	2,006 99				10,975	2,006 99
" Steam Nav. Co.	13,113	5,491 77				13,113	5,491 77
" Connolly Wharf	9,978	4,409 68				9,978	4,409 68
" Peake Bros.	12,195	5,362 46				12,195	5,362 46
" Queen St. Slip	3,915	1,109 63				3,915	1,109 65
" Geo. Peake Whf	5,865	1,644 42				5,865	1,644 42
" Poole	12,240	1,609 95				12,240	1,609 95
" McMillan	6,165	1,320 13				6,165	1,320 13
" Doin'n' Build- ing Sewer	5,355	1,146 68				5,355	1,146 68
" Publicsewerage	2,880	679 12				2,880	679 12
Webster's Corner, East River	203	43 47				203	43 47
Chapman, Victoria	118,040	34,574 90				118,040	34,574 90
Powall Bay	33,610	6,536 20				33,610	6,536 20
Rocky Point	82,920	13,426 13				82,920	13,426 13
Vernon River	17,860	6,326 72				17,860	6,326 72
Wood Islands	2,780	548 00				2,780	548 00
Nine Mile Creek	31,650	6,286 46				31,650	6,286 46
Hickey Wharf	750	150 51				750	150 51
Garris Point	12,165	2,441 28				12,165	2,441 28
Pierde	3,825	736 24				3,825	736 24
Port Augustus	3,195	631 68				3,195	631 68
Southeast Ferry	45,300	7,508 75				45,300	7,508 75
Eed Point	7,161	3,879 60				7,161	3,879 60
North Rustico	13,536	4,775 38				13,536	4,775 38
South Rustico	11,649	4,109 67				11,649	4,109 67
Gauthier's Creek	17,847	8,305 50				17,847	8,305 50
Malpeque	28,575	3,483 32				28,575	3,483 32
French River	41,071	13,311 46				41,071	13,311 46
Bay View	4,095	1,912 87				4,095	1,912 87
Wedlocks	1,260	520 48				1,260	520 48
Belfast, Hallidays Wharf	1,524 24					1,524 24	
Summerside	91,571	28,032 51				91,571	28,032 51
Hurds Point Pier	63,505	14,315 47				63,505	14,315 47
Tignish	11,387	13,005 45				11,387	13,005 45
Casimpec	1,157	538 42				1,157	538 42
Cape Traverse	16,740	5,105 89				16,740	5,105 89
Holmans Wharf	9,585	1,269 21				9,585	1,269 21
Total	1,336,271	335,082 16	49,500	13,775 37	13,775 37	1,385,771	348,857 53
		335,082 16	49,500	13,775 37	13,775 37		348,857 53

4-5 EDWARD VII., A. 1905

## EXPENDITURE for dredging in Quebec for the thirty two years ended June 30, 1904.

*From appropriations Maritime Provinces.*

County.	Locality.	TOTAL FOR THE THIRTY-ONE YEARS, ENDED JUNE 30, 1903.				FOR THE YEAR 1903-04.				Total quantity, Cubic yards.	Total cost.		Cost for each County.
		Quantity, Cubic yards.	Cost.	% cts.	% cts.	Quantity, Cubic yards.	Cost.	% cts.	% cts.		% cts.	% cts.	
Magdalen Islands, Co. Gaspé	House Harbour	6,800	2,392 92							6,800	2,392 92		
		495	242 65				2,634 97			495	242 65		2,634 97
		2,387	825 47				825 47			2,387	825 47		825 47
Témiscouata, Co. Gaspé	Rivière du Loup												
		8,123	3,997 59				3,997 59			8,123	3,997 59		3,997 59
Total		18,005	7,458 63			Nil	Nil			18,005	7,458 63		7,458 63

## EXPENDITURE for dredging in New Brunswick for the thirty-two years ended June 30, 1904.

Gloucester	Bathurst	98,637	29,095 79							98,637	29,095 79		
	Carriquet									16,485	6,312 23		35,408 02
	Richibucto	140,228	44,001 19							16,485	6,312 23		
	Cocagne	27,180	9,601 45			32,550	9,542 82			53,544 01			
Kent	Buctouche	13,065	4,934 24							27,180	9,601 45		
	"	3,510	1,110 70							13,065	4,934 24		
	"	4,140	1,310 07							3,510	1,110 70		
	"	45	14 23							4,140	1,310 07		
King's	Belleville Point	77,905	13,052 23							45			70,514 70
	Robertsons wharf												
	Kemuncobacas River	116,270	29,081 83							79,905	13,052 23		
	Moss Glen	10,200	1,924 47							116,270	29,081 83		
Northumberland	Horse Shoe, Miramichi	208,892	55,058 36							10,200	1,924 47		35,058 53
	"	29,935	7,965 31							208,892	55,058 36		
	Outer Bar									29,935	7,965 31		
	Grand Dune	37,975	10,121 67							37,975	10,121 67		
Neguac	Gordon Flats	22,425	4,403 95							22,425	4,403 95		
	"					6,300	6,969 76			6,300	6,969 76		84,519 05





## SESSIONAL PAPER No. 19

## STATEMENT of Dredging, Showing Quantities Removed in each Province and Cost of each Work for the Thirty-two Years Ended June 30, 1904.

Fiscal Year.	NEW BRUNSWICK.				NOVA SCOTIA.				QUEBEC.				PRINCE EDWARD ISLAND.				Total Quantity, Cubic Yards.	Total Expenditure.	Cost per Cubic Yard.
	Quantity.		Cost.		Quantity.		Cost.		Quantity.		Cost.		Quantity.		Cost.				
	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.			
1872-3	38,060	13,240 50	23,290	8,422 70	6,800	2,392 92									61,320	21,653 26	0. 35 32		
1873-4	57,725	14,395 57	18,600	6,545 61											83,125	23,334 10	0. 28 71		
1874-5	78,223	17,325 05	24,416	13,238 83											121,294	40,456 77	0. 33 354		
1875-6	73,935	17,040 52	91,374	21,885 90											230,192	49,818 22	0. 21 642		
1876-7	97,690	23,161 90	127,785	34,846 74											299,935	70,766 91	0. 23 594		
1877-8	81,070	23,323 92	106,857	29,697 94											270,787	64,943 04	0. 23 983		
1878-9	132,555	27,400 22	116,397	28,297 50											295,352	64,831 88	0. 21 951		
1879-80	63,540	16,581 79	127,684	34,765 84	765	374 08									220,379	64,386 69	0. 28 137		
1880-1	44,315	12,385 85	87,118	23,061 64	2,317	693 44									180,085	43,439 46	0. 25 252		
1881-2	79,640	18,626 87	89,566	33,363 71											216,531	61,347 15	0. 28 331		
1882-3	48,565	13,422 70	143,616	42,996 93											260,716	67,500 00	0. 25 890		
1883-4	47,658	17,103 38	157,360	49,050 58											284,268	79,509 01	0. 27 959		
1884-5	128,997	24,400 35	76,164	25,250 73											268,359	62,376 08	0. 23 242		
1885-6	68,505	14,874 63	56,790	21,482 05	8,123	3,997 59									142,432	46,706 34	0. 32 793		
1886-7	69,449	11,452 80	53,400	25,621 19											128,977	43,288 79	0. 33 56		
1887-8	50,152	9,252 50	84,175	29,847 00											138,102	45,000 00	0. 32 58		
1888-9	63,633	16,598 08	56,910	32,697 00											144,783	64,738 03	0. 27 29		
1889-90	86,968	20,544 93	59,783	22,821 55											177,273	54,451 87	0. 30 71		
1890-1	96,588	20,375 06	61,698	24,386 57											19,004	8,843 92	0. 30 23		
1891-2	73,928	20,392 85	81,363	27,376 08											188,398	60,757 27	0. 32 249		
1892-3	108,035	23,742 26	40,834	18,125 58											31,382	12,788 34	0. 32 49		
1893-4	77,505	21,564 27	59,581	28,664 99											66,585	55,112 83	0. 26 44		
1894-5	59,715	13,630 11	105,463	32,292 70											61,536	56,980 67	0. 26 44		
1895-6	48,905	36,428	36,428	15,828 89											48,000	10,428 90	0. 31 46		
1896-7	203,975	34,050 86	84,735	22,080 46											10,299 93	56,261 71	0. 26 38		
1897-8	187,325	27,611 17	147,685	31,497 57											171,693	47,481 45	0. 27 65		
1898-9	103,058	23,315 82	155,510	36,628 81											10,937 62	67,068 94	0. 19 73		
1899-1900	176,935	28,292 46	152,633	37,589 22											381,120	69,810 23	0. 18 31		
1900-1	263,363	32,615 29	94,557	36,141 17											13,283 71	73,228 34	0. 23 50		
1901-2	218,210	38,508 97	143,142	39,247 35											94,864	83,359 41	0. 19 76		
1902-3	197,207	36,195 40	134,648	32,856 93											26,020	87,740 59	0. 26 91		
1903-4	252,725	53,046 12	94,675	34,171 45											51,320	465,682	0. 20 93		
Totals.....	3,375,746	696,024 89	2,894,347	900,571 90	18,005	7,458 03	1,385,771	355,524 85							387,798	83,953 27	0. 21 97		
															396,900	100,992 94	0. 25 44		
																1,959,579 67	0. 25 56		

4-5 EDWARD VII., A. 1905

STATEMENT of Dredging showing Quantities removed by hand in each Province and cost of each Dredging for the Thirty-two Years, ended June 30, 1904.

Fiscal Year.	NEW BRUNSWICK.		NOVA SCOTIA.		QUEBEC.		PRINCE EDWARD ISLAND.		Total Quantity, Cubic Yards.	Total Expenditure.	Cost per Cubic Yard.
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.			
		% cts.		% cts.		% cts.		% cts.		% cts.	% cts.
1878-9	..	..	245	555 13	..	..	..	..	245	555 13	2. 26 58
1879-80	..	..	12,370	3,666 90	..	..	..	..	12,370	3,666 90	0. 29 64
1880-1	..	..	11,140	2,560 25	..	..	..	..	11,140	2,560 25	0. 22 98
1881-2	..	..	10,640	2,650 00	..	..	..	..	10,640	2,650 00	0. 24 90
1882-3	..	..	8,190	2,500 00	..	..	..	..	8,190	2,500 00	0. 30 52
1883-4	..	..	5,460	2,500 00	..	..	..	..	5,460	2,500 00	0. 45 78
1889-1900	..	..	343	248 71	..	..	..	..	343	248 71	0. 72 51
1900-1	..	..	320	250 75	..	..	..	..	320	250 75	0. 78 35
1902-3	..	..	1,615	496 38	..	..	..	..	1,615	496 38	0. 30 17
Totals.	..	..	50,353	15,428 12	..	..	..	..	50,353	15,428 12	0. 30 64

## SESSIONAL PAPER No. 19

STATEMENT of dredging in the Maritime Provinces showing quantities removed by and expenditure of each dredge during the thirty two years ended June 30, 1904.

Dredge.	TOTAL QUANTITIES AND COST FOR THIRTY-ONE YEARS ENDING JUNE 30, 1903.			1903-1904.			TOTAL FOR THIRTY-TWO YEARS ENDING JUNE 30, 1904.		
	Total Quantity.	Cost.	Per cubic yard.	Quantity.	Cost.	Per cubic yard.	Total Quantity.	Total cost.	Cost per cubic yard.
	%	cts.	%	cts.	%	cts.	%	cts.	%
St. Lawrence.....	1,496,131	390,112 12	0' 26 07	51,100	12,767 23	0' 24 98	1,547,231	402,879 35	0' 26 03
Canada.....	968,824	304,570 93	0' 31 43	33,210	11,737 67	0' 44 55	1,002,034	319,368 66	0' 31 87
New Dominion.....	1,533,417	269,812 18	0' 17 30	111,175	15,321 04	0' 13 78	1,670,592	285,133 22	0' 17 06
Prince Edward.....	1,299,911	334,250 10	0' 25 71	49,500	13,775 37	0' 27 82	1,349,411	348,065 47	0' 25 79
(Old) Cape Breton.....	534,948	139,074 33	0' 25 99	.....	.....	.....	534,938	139,074 23	0' 25 99
Geo. McKenzie.....	688,425	284,430 15	0' 41 38	19,150	12,453 20	0' 65 82	707,575	297,383 35	0' 42 02
Cape Breton.....	549,785	88,928 90	0' 16 17	54,845	18,682 92	0' 34 06	604,630	107,611 82	0' 17 79
New Brunswick.....	161,640	40,370 37	0' 24 97	77,920	13,195 51	0' 16 93	239,560	53,565 88	0' 22 36
	7,269,071	1,852,089 14	0' 25 51	396,900	100,992 95	0' 25 19	7,655,971	1,953,082 08	0' 25 51



4-5 EDWARD VII., A. 1905

STATEMENT of dredging performed by hand in the Maritime Provinces showing quantities removed and expenditure at each locality for the thirty-two years ended June 30, 1904.

Locality.	TOTAL QUANTITIES AND COST FOR THIRTY-ONE YEARS ENDING JUNE 30, 1903.						1903-1904.			Total Quantity.	Total cost.	Cost per cubic yard.
	Total Quantity.	Cost.		Per cubic yard.	Quantity.	Cost.	Per cubic yard.					
		%	cts.									
								%	cts.			
Parrsboro, N.S.	42,595	12,804 68	0' 30 06						42,595	12,804 68	0' 30 06	
Windsor, N.S.	5,450	1,627 60	0' 29 86						5,450	1,627 60	0' 29 86	
Milton, N.S.	633	499 46	0' 75 33						633	499 46	0' 75 33	
Racquette, N.S.	1,645	496 38	0' 30 17						1,645	496 38	0' 30 17	
	50,353	15,428 12	0' 30 64						50,353	15,428 12	0' 30 64	

## SESSIONAL PAPER No. 19

## PROVINCE OF QUEBEC.

## DREDGING AT BATISCAN RIVER.

Batiscan river is on the north shore of the St. Lawrence, below Three Rivers.

The dredging was continued, during the summer months of 1903, in the eastern channel for a distance of 3,600 feet.

The dredge 'St. Pierre' owned by Mr. Antoine St. Pierre, Three Rivers, resumed dredging, above the Canadian Pacific Railway bridge on June 1, 1903, and discontinued working on October 21.

The dredging was done to four feet at low water, 60,605 cubic yards of clay and sand material were removed.

Expenditure during the fiscal year 1903-04, \$5,861.50.

## DREDGING AT BEAUHARNOIS.

From July 1 to October 26, 1903, the dredge 'Nithsdale' worked at this place, making two cuts through the shoal, on the west side of the Nun's island, 2,000 feet long, 20 feet wide to a depth of 8 feet at low water; 22,207 cubic yards of clay and sand were removed.

## DREDGING AT CALUMET.

Between October 15 and November 18, 1903, the close of navigation, the dredge 'Little Giant' worked at this place, making a channel from the Ottawa river to Higginson's mill, for the purpose of allowing the logs to be taken in. One cut was made, 1,373 feet long with an average width of 20 feet and 9 feet deep at low water. As the water had lowered to such an extent that the scows could not be utilized, this work was discontinued—6,850 cubic yards of clay and sand were removed.

Work was resumed at this place by the dredge 'T. F. M. No. 1,' on May 23, and continued there up to June 30, 1904, the close of the fiscal year, making one cut along the Canadian Pacific Railway wharf up to the mill, 1,321 feet long, 22 feet wide, and to a depth of 6 feet at low water.—15,400 cubic yards of clay and sand were removed.

One hundred and forty feet of this cut was cast over.

## DREDGING IN THE CHAMBLY CANAL.

The dredge 'Richelieu' commenced work at this place on May 21, 1904, in the Little lake at the entrance to the canal, making one cut 45 feet long, 25 feet wide and to a depth of 8½ feet at low water; 240 cubic yards of clay were removed.

## DREDGING AT CHATEAUGUAY BASIN.

From May 28 to June 30, 1904, the close of the fiscal year, the dredge 'Central City' worked at this place. Three cuts were made in front of Durocher's wharf, 250, 150 and 105 feet long, 20 feet wide and 15 feet deep at low water. 5,160 cubic yards of hard-pan and boulders were removed.

## DREDGING AT COTEAU LANDING.

The dredge 'No. 4 Daly' worked at this place between August 1 and September 1, 1903, deepening alongside the steel elevator. The depth of water made was 15 feet at low water and the material removed was 7,900 cubic yards of clay.

4-5 EDWARD VII., A. 1905

## DREDGING AT DOUCET'S LANDING.

Doucet's Landing is on the south shore of the St. Lawrence, opposite Three Rivers.

The basin contemplated is situated on the eastern side of the wharf which is the terminus of the Arthabasca Railway, belonging to the Grand Trunk Railway Company.

The size of the basin would require to be 400 feet in width by 800 feet in length, so as to allow the steamboats plying at Doucet's Landing to go in, during stormy weather.

During the fiscal year 1903-04, 75,950 cubic yards of clay, sand and a great many boulders have been removed by dredge 'No. 4 Macdonald.'

Total expenditure during the fiscal year, \$11,875.15.

## DREDGING AT GRAHAM.

Between July 1 and November 19, 1903, the dredge 'T.F.M.No. 1' worked at this place, making a channel from deep water, in the Ottawa river, to Graham's wharf, a distance of 5,000 feet. Three cuts were made to a depth of 8 feet at low water, 4,775, 5,860 and 2,250 feet long respectively. The material removed at this place consisted of 57,200 cubic yards of sand and clay.

Dredge 'No. 4 Cohen' also worked at this place, from May 11 to 13, 1904, making a channel in front of Graham's wharf out to deep water. One cut was made 140 feet long, 25 feet wide and to a depth of 8 feet at low water. 910 cubic yards of clay were removed.

## DREDGING AT GRENVILLE.

Work was performed at this place, by the dredge 'Richelieu,' between July 1 and August 25, 1903, making an approach to the new wharf, in front of Dansereau's saw-mill. Two cuts were dredged about 500 feet long, 25 feet wide and to a depth of 8 feet at low water. The material removed consisted of 7,425 cubic yards of clay and sand.

## DREDGING AT L'ASSOMPTION.

The dredge 'No. 4 Daly' worked at this place, between May 28 and June 30, 1904, the close of the fiscal year. The work consisted of four cuts at the entrance to L'Assomption river, between Bourbon island and Deschamps point, each 842 feet long, 25 feet wide and to a depth of 12 feet at low water.—16,169 cubic yards of clay and stones were removed.

## DREDGING AT MONTEBELLO.

Between November 19 and 21, 1903, the close of navigation, the dredge 'Nithsdale' worked at this place, deepening in front of Owen's wharf. The material removed consisted of 297 cubic yards of hard clay and stone.

## DREDGING NICOLET RIVER.

The Nicolet empties into the St. Lawrence on its southern shore, at the foot of Lake St. Peter.

The dredge 'Pontiac' owned by the W. J. Poupore Co., of Montreal, commenced dredging at the upper section of the river, on May 15, 1903, and discontinued working on August 29, 1903, the work was resumed on May 16, 1904, and was discontinued on June 22, 1904.

Forty-two thousand three hundred and fifty cubic yards of sand, clay and stone materials were removed during the fiscal year 1903-04.

Expenditure during the fiscal year : \$6,079.26.

## SESSIONAL PAPER No. 19

## DREDGING AT NOTRE DAME DE PIERREVILLE.

The dredge 'St. Louis' commenced work at this place on July 1 and continued there up to November 17, 1903, the close of navigation. The work consisted of deepening the channel, between the mouth of the river and the outlet of Hertel channel, making one cut 25 feet wide to a depth of 8 feet at low water; 19,740 cubic yards of sand were removed.

Operations were resumed by the same dredge at this place, on May 2, and continued there up to June 14, 1904. Making one cut in the channel near the first island, 589 feet long and two other cuts in the Tardiff channel, one 648 feet long and one 377 feet long, all to a width of 25 feet and a depth of 8 feet at low water; 5,895 cubic yards of sand and slabs were removed.

## DREDGING AT RIGAUD.

Work was performed at this place, by the dredge 'No. 4 Cohen,' between October 28 and November 18, 1903, the close of navigation, deepening the channel from the Ottawa river into the River LaGraisie, through a sand shoal. One cut was made 22 feet wide to a depth of 10 feet at low water. The material removed was 7,722 cubic yards of sand and clay.

Work was resumed at this place by the dredge 'No. 4 Cohen' on May 14, and continued there up to June 30, 1904, the close of the fiscal year. One cut was made in the Rigaud river, near the Canadian Pacific Railway bridge, 1,459 feet long, 22 feet wide, and 8 feet deep at low water. Another cut was made 61 feet long, 22 feet wide and 8 feet deep at low water. Further work at this upper end of the channel could not be continued on account of high water. Three cuts were made between Seguin's point and McDonald's point, at the lower end of the river, two 782 feet long and one 100 feet long, all to a width of 22 feet and to a depth of 8 feet at low water mark; 19,434 cubic yards of clay and sand were removed.

## DREDGING IN THE RIVER JESUS.

From July 1 to October 31, 1903, the dredge 'Otto' worked at this place, deepening the channel from below McDonald's wharf towards the Canadian Pacific Railway bridge at Terrebonne. An approach was also made to the wharf at Lachenaie. The whole of this work was done to a depth of 8 feet at low water. The material removed was 24,890 cubic yards of clay, gravel and small stones.

The dredge 'Otto' also worked at this place, between June 23 and 30, 1904, the close of the fiscal year, making one cut 83 feet long, 21 feet wide and 6 feet deep at low water; 990 cubic yards of gravel and clay were removed.

## DREDGING AT ROBerval.

The dredge 'X. V. Savard' worked at the entrance of the harbour of Roberval and on the south side of the wharf between July 1 and October 30, 1903.

The quantity of material removed during the summer was 11,875 cubic yards, which consist of clay and sawdust.

Expenditure, \$3,500.

## DREDGING AT ST. ANDREWS.

Between August 26 and September 25, 1903, the dredge 'Richelieu' worked at this place, deepening the channel leading to the town wharf; 695 cubic yards of boulders were removed.

4-5 EDWARD VII., A. 1905

Dredging was also performed by the dredge 'Nithsdale' at this place, between October 29 and November 16, 1903, the close of navigation, continuing the work left undone by the dredge 'Richelieu'; 805 cubic yards of boulders were removed.

## DREDGING AT ST. ANTOINE.

From June 20 to 30, 1904, the close of the fiscal year, the dredge 'St. Louis' worked at this place, making two cuts in the channel, one 783 feet long and one 909 feet long, both to a width of 25 feet and to a depth of 7 feet at low water; 2,580 cubic yards of sand were removed.

## DREDGING AT ST. JEAN DES CHAILLONS.

Between May 16 and June 30, 1904, the close of the fiscal year, the dredge 'Nithsdale' was working at this place, making two cuts between flats, one 300 feet long and one 250 long. Two other cuts were made alongside the docks one 300 feet and one 1,110 feet long. These four cuts were made to a width of 25 feet and to a depth of 7 feet at low water. 10,535 cubic yards of hard-pan, boulders, gravel and clay were removed.

## DREDGING AT ST. JOHNS.

Work was commenced at this place by the dredge 'Richelieu,' on September 30, and continued there up to November 21, 1903, the close of navigation. The work done consisted of three cuts, 500 feet long, 22 feet wide and 9 feet deep at low water, in the channel from St. Johns harbour to Iberville wharf, and two cuts about 175 feet long, 22 feet wide and 9 feet deep in the main channel, south of the railway bridge, also removing a boulder shoal close to the draw-bridge. The total quantity of material removed was 9,630 cubic yards of clay, sand and boulders.

## DREDGING ST. MAURICE RIVER.

The River St. Maurice flows southward and empties into the St. Lawrence at Three Rivers.

*Grandes Piles to la Tuque.*—For a distance of 66 miles there is a good channel for vessels drawing less than two feet six inches of water.

The dredging was performed by dredge 'St. Maurice' at Mekinac shoal, on the 14th mile above Grandes Piles. The work was commenced on June 22, 1903, and discontinued on October 15, 1903, during which time 13,702 cubic yards of sand, clay and boulders were removed, making a channel of 40 feet wide for a distance of 2,983 feet.

The stone-lifter with a rock seeker have been working at Grande Anse, on the 37th mile above Grandes Piles, and at Batiscan crossing, on the 44th mile above Grandes Piles.

The stone-lifter was working from June 22 to October 10, 1903, during which time 318 boulders were removed and 33,940 feet of the channel examined.

Expenditure during the fiscal year 1903-04 was \$7,768.16.

*Eastern Channel.*—Some dredging was also done at the outlet of the eastern channel by the dredge 'Duke of York.' The work was commenced on May 22, and discontinued on October 24, 1903. 99,887 cubic yards of sand, clay and boulders were removed.

Expenditure during the fiscal year, \$12,954.

## DREDGING AT STE. BLAISE.

Between May 28 and June 11, 1904, the dredge 'Richelieu' worked at this place, in the channel opposite the village, making two cuts, one 190 feet long, 25 feet wide and one 505 feet long, 15 feet wide, both cuts were dredged to 7 feet at low water. 4,088 cubic yards of clay and sand were removed.

## SESSIONAL PAPER No. 19

## DREDGING AT VALLEYFIELD.

The dredge 'No. 4 Daly' worked at this place between September 2 and October 28, 1903, making a channel through the bar, about 75 feet wide, 600 feet long to a depth of 13 feet at low water. The material removed consisted of 8,400 cubic yards of sand and stones.

## DREDGING AT VILLE MARIE.

The dredge 'Queen' commenced work at this place, on September 23 and continued there up to November 7, 1903, the close of navigation. One cut was made 750 feet long, 25 feet wide, to a depth of 9 feet at low water. Another cut was also made along the front and sides of the piers, 380 feet long, 25 feet wide and 9 feet deep. 9,870 cubic yards of clay were removed.

## DREDGING YAMASKA RIVER.

This river takes its rise in the township of Bolton, in the county of Brome. It forms an outlet for several large lakes, and has a course of about 90 miles. It flows through the counties of Brome, Missisquoi, Rouville, Bagot and St. Hyacinthe, Richelieu and Yamaska, and empties into the head of Lake St. Peter on the southern side, 8 miles below Sorel.

Some dredging was performed by dredge 'No. 4 Macdonald,' from Yamaska lock to the outlet, a distance of about four miles.

Twenty-seven thousand and forty-five yards of clay and sand were removed during the fiscal year 1903-04.

Expenditure during the fiscal year was \$6,870.82.

## PROVINCE OF ONTARIO.

## DREDGING AT BURLINGTON PIERS.

The dredge 'Nipissing' worked at this place from September 15 to November 13, 1903, removing the boulders and other loose material, which had fallen from the piers and obstructing navigation; 9,340 cubic yards of boulders, stone and sand were removed.

## DREDGING AT COLLINGWOOD.

The dredge 'Challenge' worked at this place at Charlton's mill, between July 1 and August 25, 1903, deepening the approach and alongside the wharfs to an average depth of 13 feet at low water. This dredge also worked at the dry dock August 26 and 27, 1903, cleaning off the apron and gate rest. The total amount of material removed was 10,770 cubic yards of hardpan, clay, stone, gravel and boulders.

As the hull of this dredge, as well as the scows, were found to be no longer serviceable in this exposed locality, they were laid up at the docks for the winter and towed to Ottawa in the spring of 1904.

Between June 15 and 30, 1904, work was also performed at this place by the dredge 'No. 7, Coghill.' One cut was made along the southeast side of the mill pond, 536 feet long, 24 feet wide and to a depth of from 8 to 10 feet at low water.

All the material removed was cast over on the new cribwork, and when completed this work will be of a permanent nature.

4-5 EDWARD VII., A. 1905

## DREDGING AT FORT WILLIAM.

The entrance channel to the Kaministiquia river has been widened on each side parallel to the range lights. A channel was dredged along the face of the 'Empire Elevators Company's' new dock, in course of construction, and when completed will be 140 feet in width, and to a depth of 22 feet below zero of new gauge.

The channel of the River Kaministiquia, from the Mission river to the Canadian Northern Railway coal docks at West Fort William, was widened and deepened in places where shoals were found.

The total amount of material removed during the past fiscal year from the Kaministiquia river and entrance channel was 373,937 cubic yards, at a cost of \$63,383.40.

Total expenditure for the year, \$68,892.95.

## DREDGING AT GANANOQUE.

Between July 1 and September 18, 1903, the dredge 'No. 4, Cohen' worked at this place, continuing the work of deepening the channel in the river and through the shoal opposite Squaw Point. This dredging was done to an average depth of 9 feet at low water. The material removed consisted of 29,950 cubic yards of saw-dust, clay and sand.

## DREDGING AT HAMILTON.

From November 19 to 21, the close of navigation, the dredge 'Nipissing' worked at this place, in the slip for the Hamilton Steamboat Co., but owing to some misunderstanding between the parties interested, the work was ordered to be stopped. The quantity of material removed consisted of 337 cubic yards of mud and sand.

The dredge 'Nipissing' also worked at this place, from May 28 to June 30, 1904, the close of the fiscal year. Five cuts were made in front of Brown's dock and along warehouse. Two cuts were 390 feet long, two 195 feet long, and one 165 feet long. All cuts were made to a width of 27 feet and to a depth of 14 feet at low water. 17,925 cubic yards of clay and sand were removed.

## DREDGING AT HAWKESBURY.

From July 1 to August 1, 1903, the dredge 'Little Giant' worked at this place, continuing the deepening of the channel, leading from the Ottawa river to the town wharfs to a depth of 8 feet. One cut was made from below Higginson's wharf to the centre of Cobb island, a distance of 840 feet. 6,270 cubic yards of hardpan and clay were removed.

The dredge 'Little Giant' also worked at this place between May 18 and June 30, 1904, the close of the fiscal year. One cut was made from Higginson's wharf to the end of Cobb island, 1,050 feet long, 28 feet wide and to a depth of 8 feet at low water. 11,495 cubic yards of hardpan, stone and boulders were taken out.

## DREDGING AT KINGSTON.

The dredge 'Sir Richard' worked at this place between July 1 and September 14, 1903, on the approach to the Kingston and Pembroke Railway dock, widening and deepening the channel to allow coal and other vessels to reach the dock. A channel was completed about 60 feet wide and to a depth of 14 feet at low water.

The dredge was then taken to Richardson's elevator, and worked there up to October 28, deepening and widening the harbour of refuge, completing the work commenced the previous season. This work was done to a depth of 14 feet at low water.

The plant was then removed to the Rathbun's slip, at Grove-in, a suburb of Kingston, and worked there two days, making one cut in the slip, 160 feet long, 25 feet

## SESSIONAL PAPER No. 19

wide, to a depth of 9 feet, removing loose boulders and silt. Owing to the low water at that season of the year and the material below 9 feet being solid rock, work was discontinued and the dredge removed to Portsmouth, another suburb of Kingston, and made one cut along the front of Crawford's dock, about 100 feet long to a depth of 9 feet, removing an obstruction consisting of boulders.

This dredge then resumed operations, on the approach to the Kingston and Pembroke Railway dock, and removed an elbow in the channel, to give the vessels a straighter course to the basin. The dredge continued to work there up to November 19, the close of navigation. The total quantity of material removed at Kingston, including Grove-in and Portsmouth, consisted of 46,116 cubic yards of hardpan, clay and boulders.

From June 8 to 30, 1904, the dredge 'Sir Richard' was working at this place making two cuts in front of Davis' dry dock, and running out into the channel, one 350 feet long and the other 450 feet long, 25 feet wide and 10 feet deep at low water. 10,200 cubic yards of hardpan and clay were removed.

## DREDGING AT NEWCASTLE.

Dredging was done at this place by the dredge 'Nipissing,' between August 19 and September 10, 1903, dredging one cut from outside the harbour along the east pier, into the elevator wharf, a distance of 1,010 feet, 25 feet wide and 12 feet deep at low water. This work was done to enable grain and coal vessels to reach the elevator. 7,387 cubic yards of sand, stones and mud were removed.

## DREDGING AT NEW LISKEARD.

Between July 1 and September 20, 1903, the dredge 'Queen' worked at this place, making an approach to the wharfs. A channel was made at the mouth of the Wabbie river, out to deep water, 25 feet wide and to a depth of 8 feet; removing 15,715 cubic yards of clay and sunken logs.

On June 10, 1904, the dredge 'Queen' resumed operations at this place, and continued up to the close of the fiscal year, continuing the work done last season in the new channel, making one cut 500 feet long, 26 feet wide and to a depth of 9 feet at low water. The material removed at this place consisted of 9,870 cubic yards of clay.

## DREDGING IN THE OTTAWA RIVER.

The dredge 'Little Giant' worked at this place, from August 2 to October 15, 1903, deepening the channel leading to the Hawkesbury Lumber Co.'s docks. Two cuts were made, one 750 feet and one 350 feet long, 25 feet wide, to a depth of 8 feet at low water. The material removed consisted of 23,655 cubic yards of hardpan, stone and clay.

## DREDGING AT PORT ARTHUR.

The contract awarded to Mr. C. S. Boone, for dredging at Port Arthur, is completed.

The slip between the Canadian Pacific and Canadian Northern Railway wharfs has been dredged to a depth of 20 feet below zero of the new gauge established February last, 1904.

The channel from the entrance of the breakwater to the new Canadian Northern Railway elevator, No. 2, is also completed.

Some dredging was done along the face of the wharf at King's elevator in the fall of 1903, but had to be discontinued on account of construction works by the Canadian Pacific Railway Company at their new storage tank elevator.



4-5 EDWARD VII., A. 1905

The total amount of material removed from the harbour during the fiscal year was 292,154 cubic yards, at a cost of \$91,508.92.

Total expenditure for the year, \$97,497.49.

#### DREDGING AT PORT BURWELL.

Between July 17 and September 18, 1903, the dredge 'Ontario' was working at this place, dredging berths for new cribwork, at the outer end of the east pier, to a depth of  $21\frac{1}{2}$  feet, also widening and deepening an approach in front of the new wharf, in the inner harbour, at the mouth of Otter creek, to 14 feet at low water. The material removed at this place was 15,070 cubic yards of clay, slabs and logs.

#### DREDGING AT PORT HOPE.

Work was performed at this place by the dredge 'Nipissing,' between July 1 and August 17, 1903, making two cuts outside the east pier, and three cuts inside of the west pier, approaching the entrance to the new harbour. One cut was also made alongside the dock opposite the sanitary works. All this dredging was done to a depth of 14 feet at low water. The material removed consisted of 21,412 cubic yards of hardpan, stones, sand and mud.

#### DREDGING AT RONDEAU.

The dredge 'Ontario' worked at this place between July 1 and 16, and September 21, to December 5, 1903, widening and deepening the channel through the bar outside the piers, removing a ridge on the east side of the channel, which leaves a channel through the bar, 175 feet wide out to 17 feet deep at low water. One cut was also made along the east side of the west pier, 325 feet long, 25 feet wide and 17 feet deep at low water. Five cuts were also made on the approach to the Car Ferry dock, to a depth of 17 feet, with a total width of 125 feet, having an average length of 200 feet. The total quantity of material removed at this place was 25,165 cubic yards of sand and clay.

This same dredge also worked at this place between May 28 and June 30, 1904, the close of the fiscal year. One cut was made through the bar, outside of piers, 800 feet long, 25 feet wide, and to a depth of 17 feet at low water. A part of a sunken crib was removed at south end of the piers, leaving 17 feet over it at low water. When not able to work outside or between the piers, owing to rough weather, this dredge worked in the turning basin, at the north end of the piers, in the bay, making 3 cuts, two, 200 feet long and one 175 feet long, all to a width of 25 feet and 17 feet deep at low water. The material removed at this place consisted of 7,065 cubic yards of boulders and sand.

#### DREDGING AT TRENTON.

The dredge 'Trenton' worked at this place from June 18 to 30, the close of the fiscal year. One cut was made through a mud and stone shoal, to give the channel a straighter course, 2,090 feet long, 30 feet wide and to a depth of 10 feet at low water. 13,680 cubic yards of stone and mud were removed.

## SESSIONAL PAPER No. 19

STATEMENT of Expenditure and quantities of material removed by the various Dredges, at different localities, in Ontario and Quebec, during the fiscal year ended June 30, 1904.

Dredge.	Location.	Yards removed.	Character of soil.	Expenditure.	Cost per yard.
Challenge.....	Collingwood.....	10,770	Hardpan, clay and boulders.	8 cts. 3,152 20	cts. 29 <sup>1</sup> / <sub>4</sub>
Ontario.....	Rondeau.....	32,230	Clay, sand and slabs.	7,101 26	15
".....	Port Burwell.....	15,070			
Nipissing.....	Port Hope.....	21,412	Harpan, clay, stone, sand and mud.....	7,570 61	13 <sup>2</sup> / <sub>2</sub>
".....	Newcastle.....	7,387			
".....	Burlington Piers.....	9,340			
".....	Hamilton.....	18,262			
Sir Richard.....	Kingston.....	56,316	Harpan, boulders and mud	11,221 58	19 <sup>3</sup> / <sub>10</sub>
Queen.....	New Liskeard.....	15,785	Clay.....	8,796 21	34 <sup>7</sup> / <sub>25</sub>
".....	Ville Marie.....	9,870			
Richelieu.....	Grenville.....	7,425	Harpan, boulders, clay and sand.....	6,792 63	30 <sup>3</sup> / <sub>4</sub>
".....	St. Andrews.....	695			
".....	St. Johns.....	9,630			
".....	Chambly Canal.....	240			
".....	Ste. Blaise.....	4,088			
St. Louis.....	Notre Dame de Pierreville	25,635	Sand and slabs.....	3,525 79	12 <sup>1</sup> / <sub>2</sub>
".....	St. Anné.....	2,580			
Nightsdale.....	Beauharnois.....	22,207	Hardpan, boulders, gravel, clay, stone, sand and sawdust.....	12,854 57	38
".....	St. Andrews.....	865			
".....	Montebello.....	297			
".....	St. Jean des Chaillons.....	10,535			
T. F. M. No. 1.....	Graham.....	57,200	Clay and sand.....	12,811 45	17 <sup>1</sup> / <sub>2</sub>
".....	Calumet.....	15,400			
Little Giant.....	Hawkesbury.....	17,765	Hardpan, boulders and clay.	12,752 45	26 <sup>1</sup> / <sub>2</sub>
".....	Ottawa River.....	23,655			
".....	Calumet.....	6,850			
No. 4 Cohen.....	Gananoque.....	29,950	Boulders, gravel, clay, sand, sawdust and slabs.....	11,711 07	20 <sup>1</sup> / <sub>5</sub>
".....	Rigaud.....	27,156			
".....	Graham.....	910			
Otto.....	River Jesus.....	25,880	Gravel and clay.....	6,312 00	24 <sup>2</sup> / <sub>5</sub>
Central City.....	Chateauguay.....	5,160	Hardpan and boulders.....	1,935 00	37 <sup>1</sup> / <sub>2</sub>

4-5 EDWARD VII., A. 1905

STATEMENT of Expenditure and quantities of material, &c.—*Concluded.*

Dredge.	Location.	Yards removed.	Character of Soil.	Expenditure.	Cost per yard.
				\$   cts.	cts.
No. 4 Daly. ....	Coteau Landing.....	7,900	Clay, stone and mud .....	8,183 00	25 $\frac{1}{3}$
" .....	Valleyfield.....	8,400			
" .....	L'Assomption.....	16,169			
Trenton.....	Trenton.....	13,680	Mud and stone.....	1,860 00	13 $\frac{3}{4}$
No. 7 Coghill..	Collingwood.....		Casting over.....	1,446 50	



CLASSIFICATION AND QUANTITIES OF MATERIAL REMOVED BY DREDGE DURING THE YEAR ENDED JUNE 30, 1904.

DREDGE 'SIR RICHARD'

Description of Materials Dredged.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		Grand Totals.
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.		
Hard-pan.....	8,300	4,916	11,400	8,350	4,950																		9,700	47,616	
Boulders.....		300			100																		400		
Clay.....	2,800	2,300	500		1,500																		500	7,600	
Mud.....				700																				700	
Totals.....	11,100	7,516	11,900	9,050	6,550																		10,200	56,316	

DREDGE 'QUEEN'

Clay.....	6,585	5,530	4,375	7,140	1,855																	70	25,655
-----------	-------	-------	-------	-------	-------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----	--------

DREDGE 'RICHELIEU'

Hard-pan.....			230	4,910	2,060																			7,200
Boulders.....			455	280	1,780																			2,525
Clay.....		805		600																				3,813
Sand—ordinary.....	3,989	2,640																						8,540
Totals.....	3,989	3,445	635	5,190	3,840																	1,084	3,244	22,078

DREDGE 'ST. LOUIS'

Sand—ordinary.....	4,290	5,130	4,140	3,720	2,460																				26,815
Slates.....																									3,160
																									1,400
Totals.....	4,290	5,130	4,140	3,720	2,460																				3,915
																									4,560
																									3,915
																									28,215

## SESSIONAL PAPER No. 19

## DREDGE 'NITHSDALE.'

Hard-pan.....	1,260	355	412	420	1,435	3,882
Boulders.....		292	200		1,540	2,032
Gravel.....					3,220	4,220
Clay.....	2,920				1,400	6,690
Sand and stone.....		105				105
Sand—ordinary.....	2,755	3,780	197			16,815
Saw dust.....		100	100			100
Totals.....	5,765	6,772	4,232	5,040	5,495	33,844

## DREDGE 'T. F. M. No. 1.'

Clay.....	7,550	10,950	8,500	12,200	3,450	53,875
Sand—ordinary.....	6,100	500	4,350	3,600		3,175
Totals.....	13,650	11,450	12,850	12,200	4,975	18,725

## DREDGE 'LITTLE GIANT.'

Hard-pan.....	4,540	6,213	4,065	1,910		23,123
Boulders.....	3,915	4,142	3,500	1,700		18,297
Gravel.....					2,020	6,850
Clay.....				4,400	1,400	
Totals.....	8,455	10,355	7,565	8,010	3,420	4,8270

## DREDGE 'No. 4, COHEN &amp; SONS.'

Boulders.....		1,000				1,000
Gravel.....	1,150	2,712				3,852
Clay.....	9,652	6,510	1,150	3,562	5,853	31,655
Sand—ordinary.....		675	500	2,470	2,427	12,799
Saw-dust and slabs.....	1,000	6,100	1,600		3,864	8,700
Totals.....	10,652	13,820	6,077	1,600	9,717	58,016

## DREDGE 'OTTO.'

Gravel.....	700		1,550	2,020	530	4,800
Clay.....	6,370	7,710	4,090	2,450	460	21,080
Totals.....	7,070	7,710	5,640	4,470	990	23,880



## SESSIONAL PAPER No. 19

## DREDGE 'CHALLENGE.'

19 Wages.....	411 13	406 94	335 65	80 00	29 33	66 67	30 00	29 00	30 00	110 90	1,559 62
Coal.....	285 39	312 38	38 15	12 13	.....	.....	.....	.....	15 00	30 00	693 05
Provisions.....	130 74	128 81	98 20	95 10	.....	.....	.....	.....	.....	5 31	458 16
Stores.....	55 34	18 50	11 11	.....	.....	.....	.....	.....	.....	.....	84 95
Equipment.....	.....	2 70	10 20	.....	.....	.....	.....	.....	19 05	.....	2 70
Repairs.....	4 27	32 47	5 50	.....	.....	.....	.....	.....	.....	125 42	192 41
Towage.....	.....	.....	5 00	.....	12 15	4 45	.....	.....	10 70	103 33	5 50
Contingencies.....	15 84	4 34	.....	.....	.....	.....	.....	.....	.....	.....	135 81
Totals.....	902 71	907 14	503 81	187 23	41 48	71 12	30 00	29 00	71 75	374 96	3,152 20
Working expenses.....	898 44	873 67	493 61	187 23	41 48	71 12	30 00	29 00	55 70	249 54	2,959 79
Repairs, ordinary.....	4 27	33 47	10 20	.....	.....	.....	.....	.....	19 05	125 42	192 41
Totals.....	902 71	907 14	503 81	187 23	41 48	71 12	30 00	29 00	71 75	374 96	3,152 20

## DREDGE 'ONTARIO.'

Wages.....	390 16	399 81	402 04	386 83	390 83	279 32	374 28	155 00	34 84	433 67	523 12	4,137 16
Coal.....	106 67	285 84	142 25	138 33	252 24	91 51	.....	.....	.....	.....	84 37	1,101 22
Provisions.....	120 68	125 30	122 60	119 71	121 00	31 98	.....	.....	.....	220 53	.....	861 20
Stores.....	.....	24 40	.....	3 35	14 63	4 68	.....	.....	.....	.....	145 69	132 75
Equipment.....	.....	41 18	129 19	82 56	.....	.....	.....	5 75	19 00	10 75	55 68	107 61
Repairs.....	.....	.....	10 00	18 00	.....	63 46	.....	10 85	.....	1 00	152 08	466 88
Contingencies.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	131 53	293 84
Totals.....	617 51	876 56	806 09	748 78	778 70	470 95	374 28	171 60	53 84	655 20	1,092 47	7,101 26
Working expenses.....	617 51	876 56	676 90	606 22	778 70	470 95	374 28	165 85	34 84	654 20	940 39	6,634 38
Repairs, ordinary.....	.....	.....	129 19	82 56	.....	.....	.....	5 75	19 00	1 00	152 08	466 88
Totals.....	617 51	876 56	806 09	748 78	778 70	470 95	374 28	171 60	53 84	655 20	1,092 47	7,101 26



CLASSIFICATION OF DISBURSEMENTS OF the Dredges during the Year ended 30th June, 1904.  
DREDGE 'NIPissing.'

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		Grand Totals.	
	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.		
Wages .....	385	00	378	15	397	60	411	67	385	00	99	33	274	78	428	25	527	76	314	58	305	81	531	90	4,439	83
Coal .....	234	52	118	75	349	69	.....	.....	219	55	129	38	.....	.....	30	75	26	00	30	75	147	60	81	00	1,337	24
Provisions .....	124	35	119	40	128	10	.....	.....	248	10	.....	.....	.....	.....	69	00	.....	.....	69	00	61	58	21	00	772	63
Stores .....	11	27	15	87	7	75	.....	.....	7	75	5	38	.....	.....	22	50	.....	.....	17	40	24	60	19	64	131	15
Equipment .....	.....	.....	79	33	7	77	165	70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	192	80
Repairs .....	40	95	15	49	58	95	.....	.....	39	70	2	00	.....	.....	78	97	.....	.....	122	02	20	71	13	36	392	15
Contingencies .....	58	90	9	12	64	07	16	40	3	25	5	30	24	00	7	62	63	00	18	55	41	33	13	87	305	41
Totals .....	834	99	736	61	1,013	43	533	77	902	85	241	39	298	78	458	46	695	73	572	36	601	03	680	77	7,570	61
Working expenses .....	794	04	721	12	954	98	533	77	863	15	239	39	298	78	458	46	616	76	450	28	580	32	667	41	7,178	46
Repairs, ordinary .....	40	95	15	49	58	95	.....	.....	39	70	2	00	.....	.....	78	97	.....	.....	122	02	20	71	13	36	392	15
Totals .....	834	99	736	61	1,013	43	533	77	902	85	241	39	298	78	458	46	695	73	572	30	601	03	680	77	7,570	61

## 4-5 EDWARD VII., A. 1905

## DREDGE 'SIR RICHARD.'

Wages.....	279 52	752 29	521 50	389 40	330 50	117 02	350 29	9 68	125 00	361 70	316 70	661 32	4,244 92
Coal.....	196 04	225 60	405 40	297 16	6 00	.....	.....	71 34	.....	70 50	.....	100 66	1,373 30
Provisions.....	153 97	152 81	124 60	214 79	.....	.....	.....	.....	.....	.....	91 26	739 43	739 43
Stores.....	142 57	33 73	29 20	.....	4 78	.....	.....	19 48	.....	26 28	21 22	63 69	340 95
Equipment.....	.....	135 92	11 17	.....	.....	.....	.....	.....	.....	.....	.....	7 50	174 59
Repairs.....	434 17	633 52	517 46	84 97	8 65	.....	.....	15 00	29 00	275 42	128 49	193 30	2,339 98
Contingencies.....	1,438 46	295 63	40 00	5 93	14 80	.....	18 20	21 81	.....	.....	136 70	38 89	2,010 42
Totals.....	2,645 33	2,269 50	1,649 33	992 25	364 73	147 02	368 49	137 31	154 00	733 90	694 37	1,065 36	11,221 59
Working expenses.....	2,211 16	1,615 98	1,131 87	907 28	356 08	147 02	368 49	122 31	125 00	458 48	565 88	872 06	8,881 61
Repairs, ordinary.....	434 17	633 52	517 46	84 97	8 65	.....	.....	15 00	29 40	275 42	128 49	193 30	2,339 98
Totals.....	2,645 33	2,269 50	1,649 33	992 25	364 73	147 02	368 49	137 31	154 00	733 90	694 37	1,065 36	11,221 59

## SESSIONAL PAPER No. 19

## DREDGE 'QUEEN'.

Wages.....	465 57	602 27	440 00	440 00	297 34	.....	.....	456 50	663 62	588 70	3,954 00
Coal.....	.....	156 50	321 00	.....	.....	.....	.....	.....	.....	217 50	695 00
Provisions.....	134 22	138 87	37 40	135 00	84 90	.....	.....	.....	140 71	.....	671 10
Stores.....	31 20	.....	8 65	68 10	.....	.....	.....	.....	.....	.....	107 95
Equipment.....	120 40	.....	27 35	.....	.....	.....	.....	.....	39 00	.....	187 26
Repairs.....	61 23	88 97	32 40	241 37	.....	.....	.....	.....	205 32	130 30	900 96
Contingencies.....	.....	35 93	954 00	.....	98 00	.....	.....	.....	6 35	13 50	2,279 94
Totals.....	813 12	1,022 54	1,820 81	884 47	480 24	.....	.....	456 50	1,055 20	950 00	8,796 21
Working expenses.....	751 89	923 57	1,788 41	643 10	480 24	.....	.....	156 50	849 88	819 70	7,895 25
Repairs, ordinary.....	61 23	88 97	32 40	241 37	.....	.....	.....	.....	205 32	130 30	900 96
Totals.....	813 12	1,022 54	1,820 81	884 47	480 24	.....	.....	456 50	1,055 20	950 00	8,796 21

## DREDGE 'RICHELIEU'.

Wages.....	351 29	365 00	287 50	395 00	378 99	.....	.....	232 00	353 60	381 00	2,859 93
Coal.....	.....	10 61	165 90	221 01	131 63	.....	.....	.....	.....	720 09	1,543 88
Provisions.....	113 71	123 00	121 00	123 00	107 00	.....	.....	.....	83 50	102 50	773 71
Stores.....	2 84	8 65	.....	7 45	1 55	.....	.....	.....	18 46	55 65	94 00
Equipment.....	.....	.....	.....	4 94	69 00	.....	.....	.....	3 00	3 00	79 94
Repairs.....	85 40	151 86	42 74	13 75	2 14	.....	.....	.....	67 32	161 74	524 95
Towage.....	23 00	5 00	10 00	3 15	5 00	.....	.....	.....	.....	.....	46 15
Contingencies.....	284 80	263 50	254 00	.....	33 10	.....	.....	22 70	.....	1 97	870 07
Totals.....	861 04	926 42	891 14	768 30	728 41	.....	.....	254 70	525 88	1,425 95	6,792 63
Working expenses.....	775 64	774 56	848 40	754 55	726 27	.....	.....	254 70	458 56	1,264 21	6,297 68
Repairs, ordinary.....	85 40	151 86	42 74	13 75	2 14	.....	.....	.....	67 32	161 74	524 95
Totals.....	861 04	926 42	891 14	768 30	728 41	.....	.....	254 70	525 88	1,425 95	6,792 63

CLASSIFICATION OF DISBURSEMENTS OF the Dredges during the Year ended 30th June, 1904 *Continued.*  
DREDGE 'ST. LOUIS.'

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		(Grand Totals.
	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	£	cts.	
Wages.....	370 00		370 00		370 00		370 00		264 01						3 00				283 01		370 00		473 00		2,880 02
Provisions.....	103 00		103 00		103 00		103 00		66 67												137 33		2 10		619 00
Repairs.....	4 17																15 00								6 57
Towage.....																3 00									15 00
Contingencies.....			1 20		1 00																				5 20
Totals.....	477 17		474 20		474 00		473 00		330 68						6 00		15 00		283 01		507 33		475 40		3,525 79
Working expenses.....	473 00		474 20		474 00		473 00		330 68						6 00		15 00		283 01		507 33		473 00		3,519 22
Repairs, ordinary.....	4 17																					2 10			6 57
Totals.....	477 17		474 20		474 00		473 00		330 68						6 00		15 00		283 01		507 33		475 40		3,525 79

45 EDWARD VII., A. 1905

## DREDGE 'NITHSDALE.'

Wages.....	392 00	392 00	392 00	392 00	392 00	352 24				40 00												386 93	405 00	2,752 17
Coal.....						496 67	223 01																	719 68
Provisions.....	113 00	113 00	110 00	113 00	113 00	118 97															102 25	110 00	810 12	
Stores.....							69 05																69 05	
Repairs.....	12 70										10 75												23 45	
Pilotage.....			4 00																				4 00	
Contingencies.....	1,265 00	1,240 00	1,200 00	1,240 00	1,240 00	1,091 00															1,240 00	1,200 00	8,476 00	
Totals.....	1,782 70	1,749 00	1,732 00	2,241 67	1,865 02					40 00											1,729 18	1,715 00	12,854 57	
Working expenses.....	1,770 90	1,749 00	1,732 00	2,241 67	1,854 27					40 00											1,729 18	1,715 00	12,831 12	
Repairs, ordinary.....	12 70				10 75																		23 45	
Totals.....	1,782 70	1,749 00	1,732 00	2,241 67	1,865 02					40 00											1,729 18	1,715 00	12,854 57	

## SESSIONAL PAPER No. 19

## DREDGE 'T. F. M. No. 1.'

Wages .....	66 25	65 00	78 00	67 50	40 00				36 00	78 00	430 75
Contingencies .....	2,080 00	2,029 85	2,080 00	2,072 00	1,201 85				840 00	2,080 00	12,383 70
Totals .....	2,146 25	2,094 85	2,158 00	2,139 50	1,241 85				876 00	2,158 00	12,814 45
Working expenses ..	2,146 25	2,094 85	2,158 00	2,139 50	1,241 85				876 00	2,158 00	12,814 45
Totals .....	2,146 25	2,094 85	2,158 00	2,139 50	1,241 85				876 00	2,158 00	12,814 45

## DREDGE 'LITTLE GIANT.'

Wages .....	67 50	65 00	65 00	111 00	54 60				30 00		383 10
Towage .....								136 00			136 00
Contingencies .....	1,772 00	2,076 00	2,068 00	2,123 35	1,152 00				960 00	2,072 00	12,223 75
Totals .....	1,839 50	2,141 00	2,133 00	2,234 35	1,206 60			136 00	960 00	2,072 00	12,752 45
Working expenses ..	1,839 50	2,141 00	2,133 00	2,234 35	1,206 60			136 00	960 00	2,072 00	12,752 45
Totals .....	1,839 50	2,141 00	2,133 00	2,234 35	1,206 60			136 00	960 00	2,072 00	12,752 45

## DREDGE No. 4 COHEN &amp; SONS.

Wages .....	67 50	65 00	38 75	26 67	22 50				93 65	35 00	319 07
Stores .....										2 50	2 50
Repairs .....									1 50		1 50
Towage .....		2,050 00	1,544 00	312 00	1,060 00	1,896 00	992 00				992 00
Contingencies .....									1,440 00	2,054 00	10,366 00
Totals .....	67 50	2,115 00	1,582 75	338 67	1,082 50	1,896 00	992 00		1,533 65	2,101 50	11,711 07
Working expenses ..	67 50	2,115 00	1,582 75	338 67	1,082 50	1,896 00	992 00		1,533 65	2,101 50	11,699 57
Repairs, ordinary ..									1 50		1 50
Totals .....	67 50	2,115 00	1,582 75	338 67	1,082 50	1,896 00	992 00		1,535 15	2,102 50	11,711 07

## CLASSIFICATION OF DISBURSEMENTS OF the Dredges during the Year ended June 30, 1904—Continued.

## DREDGE 'OTTO.'

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		(Grand Totals.
	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	¢	cts.	
Wages.....	81	00	81	00	78	00	81	00																321 00	
Contingencies.....	1,620	00	1,560	00	1,332	00	1,227	00																5,991 00	
Totals.....	1,701	00	1,641	00	1,410	00	1,308	00																6,312 00	
Working expenses.	1,701	00	1,641	00	1,410	00	1,308	00																6,312 00	
Totals.....	1,701	00	1,641	00	1,410	00	1,308	00																6,312 00	

## DREDGE 'CENTRAL CITY.'

													4-5 EDWAR												
Wages.....																						9 00	78 00	87 00	
Contingencies.....																						200 00	1,648 00	1,848 00	
Totals.....																						209 00	1,726 00	1,935 00	
Working expenses.....																						209 00	1,726 00	1,935 00	
Totals.....																						209 00	1,726 00	1,935 00	

4-5 EDWARD VII., A. 1905

SESSIONAL PAPER No. 19

DREDGE 'N. 4 DALY.

Wages.....	78 00	75 00	72 00	9 00	78 00	312 00
Contingencies.....	1,998 00	1,924 00	1,924 00	200 00	1,956 00	7,871 00
Totals.....	1,9 6 00	1,995 00	1,955 50	209 00	2,034 00	8,183 00
Working expenses.....	1,986 09	1,999 00	1,955 00	209 00	2,034 00	8,183 00
Totals.....	1,986 00	1,999 00	1,955 00	209 00	2,034 00	8,183 00

DREDGE 'TRENTON.

Wages.....	36 00	36 00	36 00	36 00	36 00	36 00
Contingencies.....	1,824 00	1,824 00	1,824 00	1,824 00	1,824 00	1,824 00
Totals.....	1,860 00	1,860 00	1,860 00	1,860 00	1,860 00	1,860 00
Working expenses.....	1,860 00	1,860 00	1,860 00	1,860 00	1,860 00	1,860 00
Totals.....	1,860 00	1,860 00	1,860 00	1,860 00	1,860 00	1,860 00

## PROVINCE OF MANITOBA.

### DREDGING WHITEMUD RIVER.

The dredge 'Manitoba' operated about the White Mud river, widening and deepening the channel. Thirteen thousand eight hundred and fifty-one cubic yards were removed during the months of July and August, 1903, at the cost of \$3,469.70.

The dredge was subsequently moved to the outlet of Lake Francis, where the total excavation, up to June 30, 1904, aggregated 30,822 cubic yards at the cost of \$2,982.32. The total quantity of material removed by this dredge during the fiscal year ended June 30, 1904, is 44,653 cubic yards, at the total cost of \$6,452.02 or an average cost per cubic yard of a little over 14 cents.

A little difficulty was experienced in starting the work at Lake Francis, as there was no shelter for the plant.

The dredge stood outside during one or two severe storms, but beyond being a little strained, suffered no great damage, and soon made headway enough into the cut to shelter herself.

### DREDGING LAKE FRANCIS OUTLET.

The dredge 'Manitoba' and vessels were removed to Lake Francis at the latter end of August, 1903, and the dredging of an entrance into the inner lake was immediately started, between the guide piers, the dredge worked until time came to lay up the plant into winter quarters.

A safe berth was dredged, and the dredge and vessels placed therein for the winter season. Operations were resumed in the spring, 1904. The entrance channel was deepened and widened, and the work of dredging a small turning basin inside was commenced. The total quantity excavated is 30,822 cubic yards at the cost of \$2,982.32, or an average per cubic yard of 9½ cents.

### MANITOBA DREDGES.

#### *Dredge 'Winnipeg.'*

The dredge 'Winnipeg's' operations during the season 1903, were confined to dredging the new channel at the mouth of the Red river. The quantity of material moved during that period was 43,230 cubic yards. In 1904, up to June 30, after buoying the channel at the mouth of the Red river, as is customary, the dredge removed some bars that had formed during freshets, and storms, in the old channel, and excavated 11,000 cubic yards, making a total excavation of 54,230 cubic yards removed and dumped into deep water at distances varying from half to one and a half miles.

The total expenditure has been \$11,999.76, or an average cost per cubic yard of 22 cents.

The work on the new channel, consists in a cut of an average width of 65 feet, and a depth of 11 feet.

### DREDGE VESSEL REPAIRS.

The work of repairing the dredges and plant was proceeded with, and the sum of \$7,199.33 was expended during the fiscal year 1903-04.

## SESSIONAL PAPER No. 19

The dredge 'Manitoba' that had been pretty well battered during one or two storms, was repaired; some new planking was put in, spuds and slides repaired, the dredge re-caulked, and the machinery overhauled. The two scows and the little tug, also underwent the ordinary amount of repairs that is generally required after a season's operations.

The dredge 'Winnipeg' also received an ordinary amount of repairs, but the latter dredge's two scows had to be hauled up and completely gone over, bottom and end planks renewed, recaulked throughout, rollers renewed, &c. The hull of the tug 'Victoria' was also renewed, the old one having become entirely unsafe and water logged, and the boiler intended to replace the tug 'Sir Hector's' boiler, was ordered, so that both dredges 'Winnipeg' and 'Manitoba' were left in a very good and safe working condition.



4-5 EDWARD VII., A. 1905

## CLASSIFICATION OF DISBURSEMENTS OF the Dredges during the Year ended 30th June, 1904.

## DREDGE 'MANITOBA.'

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
Wages.....	1,061 98	734 35	637 37	611 03	80 00	249 25	80 00	93 90			620 75	552 00	4,741 03
Wood.....						7 94							7 94
Provisions.....	207 16	15 07	115 25	30 19	81 70	11 05					13 65		471 07
Equipment.....	85 73	132 62									13 40		245 58
Repairs.....	16 00	75 94	39 74	114 59			57 16	20 00				33 88	609 56
Towage.....		176 00			44 00								220 00
Contingencies.....	43 10	86 00	6 45	14 72							3 57		153 84
Totals.....	1,415 97	1,220 38	818 81	800 53	205 70	490 49	137 16	113 90			651 37	597 71	6,452 02
Working expenses.....	1,399 97	1,144 44	779 07	635 94	205 70	218 24	80 00	93 90			651 37	563 83	5,842 46
Repairs, ordinary.....	16 00	75 94	39 74	144 59			57 16	20 00				33 88	609 56
Totals.....	1,415 97	1,220 38	818 81	800 53	205 70	490 49	137 16	113 90			651 37	597 71	6,452 02

## SESSIONAL PAPER No. 19

## DREDGE "WINNIEK."

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		Grand Totals.	
	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%	cts.	%
Wages, .....	1,031 91		890 70		789 05		626 48		243 00		84 00		80 00		87 20		686 25		.....		686 25		850 30		5,348 89	
Coal, .....	797 39		914 81		.....		205 90		603 08		.....		.....		228 25		149 76		.....		149 76		360 37		3,031 31	
Wood, .....	10 25		5 50		.....		8 00		3 50		.....		.....		.....		.....		.....		.....		.....		253 36	
Provisions, .....	259 77		392 51		221 82		163 65		44 55		.....		.....		.....		296 51		.....		296 51		184 41		1,563 22	
Equipment, .....	.....		36 92		79 50		60 00		27 00		.....		.....		.....		112 36		.....		112 36		.....		345 78	
Repairs, .....	556 03		79 68		150 81		284 38		49 01		.....		.....		76 67		100 99		.....		100 99		32 19		1,329 76	
Contingencies, .....	19 00		17 55		10 25		13 75		.....		.....		.....		.....		6 00		.....		6 00		38 75		105 30	
Totals, .....	2,674 35		2,337 67		1,251 43		1,362 16		970 14		84 00		80 00		392 12		1,381 87		.....		1,381 87		1,466 02		11,999 76	
Working expenses, .....	2,118 32		2,257 99		1,100 02		1,077 78		921 13		84 00		80 00		315 45		1,280 88		.....		1,280 88		1,433 83		10,070 00	
Repairs, ordinary, .....	556 03		79 68		150 81		284 38		49 01		.....		.....		76 67		100 99		.....		100 99		32 19		1,329 76	
Totals, .....	2,674 35		2,337 67		1,251 43		1,362 16		970 14		84 00		80 00		392 12		1,381 87		.....		1,381 87		1,466 02		11,999 76	

PROVINCE OF BRITISH COLUMBIA.

DREDGING BRITISH COLUMBIA.

This appropriation covers the services of the hydraulic dredge 'King Edward,' dipper dredge 'Mud Lark,' and snag boat 'Samson' when not engaged in any work which there has been a special or local appropriation—such as Victoria harbour—and is supposed to cover work at different points on the Fraser river and elsewhere as may be required. The snag boat's duties consist of removing snags on the Fraser river from the Gulf of Georgia to Chilliwack, or head of navigation—seventy-five miles—surveying, attending to tide gauge on Sand heads, and looking after, repainting and keeping in place for the Department of Marine and Fisheries, the numerous buoys marking the channels at the entrance to the Fraser. Both dredges and snag boat are kept constantly employed for the entire year.

The dredge 'King Edward' was not released from her work in Victoria harbour until the latter part of November, 1903, when she was removed to Langley Slough on the Fraser river for the purpose of opening the slough immediately in front of the town of Langley. Work was begun on December 14, and completed February 26, 1904. Some considerable repairs were required before commencing the work of giving a navigable channel in the North Arm of the Fraser for logs and tugs in the interest of the local mill owners—which work, after a few days deepening in front of the Royal City Mills, was not commenced until April 20, but was carried on continuously until the end of the fiscal year, or June 30, 1904.

The dredge 'Mud Lark' has been steadily engaged on work in Victoria harbour.

The expenditure for the fiscal year 1903-04, on the service of dredging, British Columbia, as represented by the operations of the dredges 'King Edward' and 'Mud Lark,' and snag boat 'Samson' is as follows :—

Dredge 'King Edward' . . . . .	\$19,806 06
Dredge 'Mud Lark' . . . . .	6,732 17
Snag boat 'Samson' . . . . .	9,988 47
	<hr/>
	\$36,526 70

The expenditure of the above vessels are in detail as follows :—

*Dredge 'King Edward.'*

Wages . . . . .	\$6,643 89
Provisions . . . . .	1,738 14
Material . . . . .	6,704 82
Fuel . . . . .	3,763 00
Water . . . . .	14 31
Tug hire . . . . .	840 00
Contingencies . . . . .	101 90
	<hr/>
	\$19,806 06

*Dredge 'Mud Lark.'*

Wages . . . . .	\$2,365 05
Provisions . . . . .	450 25
Material . . . . .	3,188 77
Fuel . . . . .	722 25
Water . . . . .	5 85
	<hr/>
	6,732 17

## SESSIONAL PAPER No. 19

*Snag Boat 'Samson.'*

Wages . . . . .	\$6,556 84	
Provisions . . . . .	1,465 35	
Material . . . . .	798 16	
Fuel . . . . .	1,059 00	
Water . . . . .	71 42	
Contingencies . . . . .	37 70	
		<hr/> 9,988 47
Total . . . . .	\$36,526 70	<hr/>

## DREDGE REPAIRS, BRITISH COLUMBIA.

This service represents ordinary and extraordinary repairs to the dredges 'Mud Lark' and 'King Edward,' and snag boat 'Samson.' The dredge 'Mud Lark' being an old vessel, has taken up the greatest part of the appropriation for repairs.

The expenditure for the fiscal year 1903-04, on repairs for the respective dredges and snag boat, is as follows :—

*Dredge 'King Edward.'*

Ordinary . . . . .	\$ 210 55	
Extraordinary . . . . .	915 00	
		<hr/> \$1,125 55

*Dredge 'Mud Lark.'*

Ordinary . . . . .	\$ 209 04	
Extraordinary . . . . .	3,597 94	
		<hr/> 3,806 98

*Snag Boat 'Samson.'*

Ordinary . . . . .	\$ 66 92	
Extraordinary . . . . .	Nil.	
		<hr/> 66 92
Total . . . . .	\$4,999 45	<hr/>

## DRY DOCKS.

The Dominion government owns and operates three dry docks, viz.: the Lorne dry dock at Lévis, in the province of Quebec; the Kingston dry dock, at Kingston, in the province of Ontario; and the Esquimalt dry dock, at Esquimalt, near the city of Victoria, in British Columbia.

## LÉVIS DRY DOCK.

This property of the Dominion government has been maintained in an efficient manner during the fiscal year 1903-04, and has been occupied by four vessels during the winter months and for 22 days during the open season.

The expenditure for the fiscal year for maintenance of ordinary repairs was \$13,833.54.

## ESQUIMALT DRY DOCK.

During the year 1903-04, the dock was occupied 154 days by thirteen vessels, aggregating 43,028 tons and the dues collected for the above services amounted to \$9,844.38.

The only new work done during the year was a complete set of electric light poles fitted around the dock for the incandescent lights, and a new offal scow built.

Besides attending to docking vessels, &c., the staff were employed keeping the whole plant in good order, and ready for service at the shortest notice.

The caisson was placed on the outside berth, chipped (where necessary) cleaned and painted inside, with red lead, and outside with Rabtjen's composition paint, other parts were cleaned and painted, this property is kept in first class condition.

The expenditure during the year 1903-04, was \$12,849.45.

## KINGSTON DRY DOCK.

During the fiscal year 1903-04, the dock has been kept in good working order with the ordinary care to the machinery and caisson. During the season of navigation the dock was occupied for seventy-three days and ninety-three days in the winter season, the number of vessels accommodated was thirty-six, forming a total tonnage of 23,086 tons. During the fiscal year a building was completed to serve as an office, which had to be rented in previous years.

The expenditures during the last fiscal year amounted to \$5,084.33 and the revenue from dues collected was \$6,989.36.

## RIVIÈRE DU LIÈVRE LOCK.

This lock is situated at Poupore, on the Rivière du Lièvre, 12 miles above Buckingham, in the county of Labelle. It was built to overcome the difficulties of navigating the Little rapid, the dam in connection with it also flooded the Long rapid, 6 miles above, and rendered the river navigable up to the foot, of High falls, a total distance of 19½ miles above Buckingham.

Below the last named place, the Lièvre river forms a succession of rapids and falls, which give extensive water power to a number of saw and pulp mills, over a distance of 3 miles, and the river falls in the Ottawa river, 21 miles below the city of Ottawa. This stretch of navigable water above Buckingham, is an important accom-

## SESSIONAL PAPER No. 19

modation to the settlers of the upper part of the Rivière du Lièvre, who have no railway communications and it is only of late years that a highway has been built on one side of the river.

The lock and dam were completed in 1892, at a total cost of \$233,658.65, they have been kept in good working condition until October 11, 1903, when an extensive landslide occurred on the west side of the river, just below the dam. The land-slide covered a distance of about  $1\frac{1}{2}$  miles below the dam and a width of about one-quarter of a mile from the river bank, some 200 acres of land under culture were destroyed together with farm houses and outbuildings, the farmers and their families barely escaping with their lives, the accident occurred at 5 o'clock in the morning. The river was completely choked for 6 hours, the water above rose to a height of 15 feet above its original level and then scoured out numerous small channels through the earth filling formed by the land-slide. The upper part of the dam was shoved against the head of water above and 7 feet in height of its top was carried away on a length of 200 feet, the dam is 250 feet long between abutments. Two days after the accident, an officer of the department was ordered to the place with instructions to help as much as possible the carrying on of the traffic.

In a few days, one of the channels through the earth embankment, had been scoured out to a sufficient depth to permit one of the small steamers doing the service on the river to be pulled through it by means of winches, and intended to make the run above the dam, the other steamer remained below. A portage road  $1\frac{1}{2}$  miles long was built on the east side of the river to connect its two navigable parts, two freight sheds, 20 x 12 feet, one at each end of the road, were constructed and a contract was awarded to carry the freight and passengers by teams over the portage road.

At its session of 1904, parliament voted an appropriation of \$20,000 to be applied towards the reconstruction of the dam, the work has been started.

The amount expended during the fiscal year 1903-04, was \$5,517.15.

## YAMASKA LOCK AND DAM.

A lock and dam were built in 1886, at Ile a Cardin, on the Yamaska river,  $1\frac{1}{2}$  miles below the village of St. Michel de Yamaska, and about  $4\frac{1}{2}$  miles from the mouth of the river, the lock gives a lift of  $5\frac{3}{4}$  feet.

During the fiscal year 1903-04, four lock gates were rebuilt.

The expenditure amounted to \$2,611.60.

4-5 EDWARD VII., A. 1905

## SLIDES AND BOOMS.

The Dominion government owns and operates slides and boom works, built to facilitate the passage of square timber, round logs, flatted and dimension timber, &c., on the River Ottawa and tributaries, on the lower forty miles or so of the St. Maurice, and in the Trent and Newcastle district, between Fenelon Falls and Heeley's Falls.

In the subjoined reports, the superintending engineers of these river works, Messrs. G. P. Brophy, F. X. Thos. Berlinguet and S. Clegg, give particulars relative to the construction, improvements and repairs carried out under their supervision on government slides, booms, piers, dams, streams, buildings, &c., during the fiscal year, the expenditure incurred for staff, maintenance, improvements, &c., the quantities of the various descriptions of timber that pass through their works, and other information of general interest and utility to lumbermen and the public at large.

## REPORT ON THE OTTAWA RIVER WORKS.

(By G. P. Brophy, superintending engineer.)

OTTAWA RIVER WORKS OFFICE,  
OTTAWA, September 28, 1904.

EUGÈNE D. LAFLEUR, Esq.,

Acting Chief Engineer,

Department of Public Works of Canada.

SIR,—In accordance with instructions, received in your communication dated June 29 last, I have the honour to submit the following report on the works under my charge, for the fiscal year ended June 30, 1904.

As is the usual custom, the foundations of the various works were examined, at season of low water, and the necessary repairs were done during the autumn and winter months and may be described as follows :—

## REPAIRS AT STATIONS ON OTTAWA RIVER (MAIN STREAM).

*North Chaudière or Hull.*—At this station, a break at the foot of the lower slide was repaired, new sills, sides and flooring were laid for a length of about forty feet, and at the entrance to the slide, the sides, where gouged out, were sheeted with 3-inch plank. At the waste gate, to the west of the slide, a large quantity of saw-logs, drift-wood, &c., was removed, in order to admit of the free regulation of the stop-logs. Two new stop-logs were provided for the waste gate. A portion of the upper slide was also repaired, where the material had worn too thin, a section of 50 feet in length, having been replaced by new timbers. The flooring of this slide was also patched, where found necessary. The guide booms were generally strengthened by new cross fenders and planking. A small supply of timber, suitable for repairs, was purchased for use in case of emergency.

*South Chaudière or Ottawa.*—At the outlet of the Long slide, a pier was built to lessen the 'pitch-off' at this place. This is a stone-filled crib, covered on top with 3-inch plank and forms an addition to the slide. The pier is 33 feet long, 27 feet wide

## SESSIONAL PAPER No. 19

and 5 feet high. The stiff guide boom at the foot of the Long slide was overhauled, new timbers, planking, tie-irons and cross-binders having been added to render the boom more serviceable. At the proper season the different guide booms and aprons were disconnected and laid up in winter quarters. As the level of water in the slide and hydraulic channels, is constantly changing, ice had to be cut from the booms, aprons and support piers during the winter to protect these works from damage. At the general storehouse yard, two sheds were built, one 100 feet long, 16 feet wide and 16 feet high to store hoisting crabs, chains and spikes; the other  $46\frac{1}{2}$  feet long,  $21\frac{1}{2}$  feet wide and 12 feet high for trucks, carts, heavy irons, &c. These two sheds are sheeted with planed lumber and received three coats of paint. The roofs of the sheds and also those of the two storehouse buildings were covered with three-ply tarred felt paper and gravel.

*Chats.*—The outlay at this station was for timber, plank and tools for repairs to the glances in the channel, governing dam and slide bulkhead. The sides of the glance piers, in the channel leading to the slide, had become so much worn by passing cribs that the deficiency had to be filled in by new timbers and plank. The dam, on the south side, at the head of the slide, was removed to low water mark for a length of some sixty feet and rebuilt. The crab frame at the lower slide bulkhead was replaced by new material. A supply of timber was also procured for future repairs at this station.

*Mountain.*—In the spring of 1903, a part of the slide pier, on the west side, at the outlet of the slide, was carried away by high water and had to be replaced. This forms the slide wall of the slide and the portion rebuilt was 40 feet long, 12 feet wide and 8 feet high. The guide boom at the entrance to the slide, weakened by over pressure, was raised and re-inforced by new timbers, held in position by 1-inch screw bolts. A new snubbing post was set in the bank to which the boom was attached by chains. The second bulkhead which was considerably sagged, was levelled to place and new sills were placed on top of the side piers to make a suitable foundation for the posts supporting the cross-stringers.

*Calumet.*—At the entrance to the third slide the flooring was taken off and three new cross-sills were inserted to take the place of those which were broken.

The apron at the foot of the long slide was taken apart and broken fingers were either renewed or spliced with hardwood plank and screw bolts. The planking on top of the apron was also renewed, and underneath, a cross-sill, carried in proper bearings, was placed to support this structure, at its centre. A section of the side pier of the long slide was rebuilt. This is 136 feet long, 3 feet high and varies in width from 6 feet at the lower end to about 3 feet at the upper end, as the face of the rock is uneven at this point. At different places in the long slide the planking in the bottom was patched and renewed.

*Joachim.*—The repairs at this station were of a trivial nature and consisted in replacing some missing planks in the bottom of the slide.

## TRIBUTARIES OF THE OTTAWA.

*Gatineau River.*—At this river the tops of the booms were planked with new material and fenders were placed on the piers to protect the corners. During the spring months, ice was cut from around the booms and piers and extra chains and cables were used as a safeguard against excessive pressure from ice and water. As some of the piers, supporting the main boom, are becoming somewhat unserviceable, having been constructed many years ago, repairs of a more extensive character will have to be undertaken shortly, to place these works in thorough state of efficiency. The station house was extended and the old portion re-shingled. The boats and scows were painted and kept in a proper state of repair.



4-5 EDWARD VII., A. 1905

*Madawaska River.*—At the mouth of the Madawaska, two piers, supporting the retaining boom were patched. The top of pier No. 1 (11 feet by 16 feet) in the outside range, was rebuilt for a depth of about 3 feet. New fenders were placed on this pier and also on pier No. 2, outside range.

At Flat rapids two breaks in the face of the flat dam were repaired with 4-inch plank.

At Long rapids a section of the pier dam was rebuilt. The portion repaired is 84 feet long, 12 feet wide and about 4 feet high. As considerable quantity of the stone ballast in this dam was missing, new material was provided to make good the deficiency.

*Coulouge River.*—At High Falls station the guide boom, at the entrance to the slide, was repaired where damaged and strained by ice shoves last spring. A section of the stiff boom, at the mouth of the slide, was entirely rebuilt. This is 76 feet long, 33 inches wide and 20 inches deep, and forms a feeding platform. The boom is held together by  $\frac{3}{4}$ -inch screw bolts and is sheathed in front with 3-inch, maple plank, to prevent excessive wear. Near the head of the slide, a snubbing pier had to be rebuilt from low water line. It is 22 feet long, 16 feet wide and 8 feet high, the east end being sheathed with 3-inch pine plank, to prevent the water leaking through at the rear of the pier. Rock bolts  $1\frac{1}{4}$ -inch iron were placed in the solid rock to secure the pier to the bank, which slopes off at this point. Some missing planks were placed on the face of the rolling dam, at the head of the slide. The slide was repaired at different places through its entire length (3,000 feet). Some 575 lineal feet of timber were used in renewing the posts and sills, and 11,000 feet board measure, 3-inch hard maple and oak plank were laid in the slides where the sheeting was defective.

*Black River.*—The Sheeting in the sides and bottom of the slide at High Falls was patched and renewed where found necessary, and a large number of flat iron bars, fastened with split spikes, were set at the curves where the wear was the greatest. In May, 1904, at a point about 150 feet from the outlet of the slide a break occurred, extending over a distance of 86 feet. This was speedily repaired so that very little delay was occasioned by the accident. Twenty new cross sills, supported on a crib filled with stone, were put in and the new side of the slide was built of solid timber.

*Petewawa River.*—At Second Chute station, a hole in the main governing dam was repaired. The water was drawn off from the basin above the dam, logs and timber were removed from the hole and the breach was covered with 4-inch plank.

At Third Chute station, iron bars were placed on the faces of the glance piers to protect them from abrasion by passing logs and timber. A number of rocks were blasted to improve the running in the timber channel. A pier 12 feet square was built to strengthen the boom at the north side of the feeding gap; and on the south side, the snubbing pier was shifted up stream to give the guide boom the proper slant to feeding gap. The latter pier is 16 feet square by four courses high.

At Crooked Chute, eighteen pieces of boom timber were purchased for repairs to the boom pier and to the slide at this station.

About half a mile below the outlet of Trout lake, the lower portion, 180 feet in length, of a flat dam was patched. New timbers were laid and 4-inch sheathing placed on the face.

At meno rapids, about  $1\frac{1}{2}$  miles above McDougald's slide, a flat dam 30 feet long, and 7 feet face, was built. A pier dam 65 feet long and ten feet high was also repaired at this station. Decayed timbers were removed and replaced by new ones and a quantity of ballast was placed in the pier.

At McDonald's station, a number of the slide posts were renewed and the sheathing was patched. Planking on the face of the governing dam was also renewed.

The large retaining dam at the outlet of Cedar lake had become so much dilapidated, that extensive repairs had to be undertaken, to place this work in serviceable

## SESSIONAL PAPER No. 19

condition. The bulkhead platform and crab frames, which had been rebuilt more recently, were removed and the piers supporting them were rebuilt. There are three of these piers, forming two sluiceways, or gates. Each pier is 24 feet long, 12 feet wide and 12 feet high above the flooring in the gates. The wing dam at the north end of the bulkhead was rebuilt. This is a pier, filled with stone, 175 feet long, 8 feet wide (except the portion adjacent to the bulkhead pier, which is 13 feet wide at the foundation) and varies in height from 3½ feet at the north end to 8½ feet at the south end. The flooring of the north gateway was relaid, with 8-inch material. The top of the apron, immediately before the flooring in the north gate was rebuilt. This is 8 inches thick and is carried on 12-inch by 12-inch cross-sills. The top of the apron and the sides of the piers in the north gate were covered with ¼-inch iron to protect the exposed surfaces. The sides of the piers in both gates, above the stop-log checks, were sheathed with 6-inch plank to provide the proper glance. Angle irons, 3½ inches by 7 inches by 9-16-inch by 9 feet long, were placed on all the lower corners of the stop-log checks. At the entrance to both gates, eight fenders, 10 feet long, were placed to protect the corners. Eighteen stop-logs, with staple attachments, were provided for the bulkhead. Two piers to support the guide boom were built 205 feet above dam. These are 16 feet square at the base, 10 feet square at the top and 14 feet high, and form a gap 45 feet in width, from which logs are fed to the sluiceway. A course of timber was laid on top of the pier dam forming the south wing, as this structure was too low during the season of high water. The guide booms leading to the sluiceways were overhauled and placed in proper position.

In the spring of 1904 the water in the Petewawa river rose to an exceptionally high pitch, and, in consequence of this, two of the glance piers at the third chute were unable to withstand the extreme pressure and were dislodged. At Crooked Chute the top of a pier supporting the guide boom was carried away and the fastening at the upper end of the boom was torn out.

*Dumoine River.*—At High Falls station, three piers supporting the main guide boom were repaired by placing 10-inch by 10-inch by 10-feet upright timbers on the sides, and connecting the centre ones by hook bolts of 1-inch iron and ¾-inch chains, with a view of binding the piers together and preventing the side walls from spreading. The guide booms were patched and properly stretched and secured. The sheeting in the sides and bottom of the slide was repaired where found defective. Iron bars were placed at curves in the slide, and at the corners in the bottom, timbers were set to stiffen the structure and protect the side walls. A short distance from the entrance of the slide, where it passes over a deep gulch, the high bents supporting the superstructure were stiffened by diagonal braces.

Last spring the water in the Ottawa river and its tributaries was unusually high, and during the period covered by this report, remained at a very favourable pitch for log driving operations, and the indications are that all the drives will reach their destination successfully.

The following statement, prepared from information furnished by the collector of revenue in your department, shows the number of pieces of the various descriptions of timber that passed these works and the revenue accrued thereon, during the fiscal year ended June 30, 1904 :—

4-5 EDWARD VII., A. 1905

	Pieces.
Square timber . . . . .	15,092
Saw-logs . . . . .	4,314,524
Boom and dimension timber . . . . .	151,598
Cedars . . . . .	141,362
Railroad ties . . . . .	466,124
Fence posts . . . . .	139,077
Total . . . . .	5,227,777

Also 13,672  $\frac{31}{10}$  cords pulpwood.

The revenue accrued on the above was \$11,756.85.

I have the honour to be, sir,  
Your obedient servant,

GEO. P. BROPHY,  
*Superintending Engineer, Ottawa River Works.*

## SESSIONAL PAPER No. 19

STATEMENT showing Expenditure for Repairs to Works on Ottawa River and Tributaries for fiscal year ended 30th June, 1904.

Name of Station.	Province.	Electoral District.	Expenditure from July 1, to Dec. 30, 1903.	Expenditure from Jan. 1, to June 30, 1904.	Expenditure from July 1, 1903 to June 30, 1904.
<i>Ordinary Repairs—Ottawa River Works.</i>			% cts.	% cts.	% cts.
Ottawa River, Main Stream—					
North Chaudière Station..	Quebec .....	District of Wright ..	451 46	430 53	881 99
South " .....	Ontario. ....	City of Ottawa .....	1,635 74	972 76	2,608 50
Chats Station .....	" .....	N. Riding Co. Renfrew..	3 76	494 60	498 36
Mountain " .....	Quebec .....	County of Pontiac.....		596 57	596 57
Calumet " .....	" .....	" .....		517 20	517 20
Joachim " .....	" .....	" .....		14 94	14 94
			2,090 96	3,026 60	5,117 56
<i>Tributaries of Ottawa River—</i>					
Gatineau River. ....	Quebec .....	District of Wright ..	114 13	733 14	877 27
Madawaska " .....	Ontario. ....	S. Riding of Co. Renfrew		407 01	407 01
Coulouge " .....	Quebec .....	County of Pontiac.....		1,076 17	1,076 17
Black " .....	" .....	" .....		269 86	269 86
Petewawa " .....	Ontario. ....	N. Riding of Co. Renfrew			
		and Nipissing. ....	3,488 15	2,528 50	6,016 65
Dumoine " .....	Quebec. ....	County of Pontiac .....	425 70	553 24	978 94
			4,057 98	5,567 92	9,625 90
Total, Ottawa Riv. Wks. ....					14,743 46
<i>Ordinary Repairs—Bridges at Ottawa and Roadway and Bridge Approaches between Ottawa and Hull.</i>					
Chaudière Bridge.....	Ontario.....	City of Ottawa. ....	60 50	243 85	304 35
Union " .....	" & Quebec	" Dist. of Wright ..	261 50	165 48	426 98
Hull Slide " .....	Quebec. ....	District of Wright ..	16 25	31 12	47 37
Roadway and Bridge Approaches between Ottawa and Hull.....	Ontario and Quebec.....	City of Ottawa and District of Wright. ....	547 92	624 03	1,171 95
Total for bridges, Ottawa .....			886 17	1,064 48	1,950 65
<i>Extraordinary Repairs—</i>					
Joachim Bridge Approaches	Quebec. ....	County of Pontiac. ....	81 00		81 00
Laurier Bridge Approaches	Ontario.....	City of Ottawa.....	1,965 62	401 06	2,366 68
Dufferin Bridge—Ottawa..	" .....	" .....		1,350 00	1,350 00
Total .....					20,491 79

JOS. KENT,  
Acting Accountant.

OTTAWA, September 20, 1904.

4-5 EDWARD VII., A. 1905

## REPORT ON THE TRENT AND NEWCASTLE DISTRICT WORKS.

PETERBOROUGH, August 15, 1904.

EUGÈNE D. LAFLEUR, Esq.,  
Acting Chief Engineer,  
Department of Public Works,  
Ottawa, Ont.

SIR,—In compliance with your request in your letter of June 29, 1904, I have the honour to submit the following report on the works under my charge on the Trent river and the water tributary to it, for the year ending June 30, 1904.

These works extend from the Bay of Quinte on the south to Balsam lake on the north.

*Healeys Falls.*—The works here are in good repair.

*Hastings.*—The booms were repaired, and some minor repairs were done to the slide.

*Otonabee River, near Rice Lake.*—Two piers 12 x 16 feet were rebuilt from the water line and filled with stone. These piers are used for attaching booms to, when running the logs out into the lake.

*Little Lake Peterborough.*—The boom here is about half mile long, there are four anchor piers; the booms were taken off in the fall and placed in winter quarters and replaced in the spring and repaired.

*Katchewanæ Lake.*—The boom dividing the lake, making a log and a boat channel from Youngs point to Lakefield, a distance of four and a half miles, has been put in first-class repair, chains and new anchors were renewed where required. This boom was never in better shape.

*Burleigh Falls.*—The work of building a glance pier 12 x 32 feet above the falls, also a small pier 10 x 10 feet and putting on a stiff boom to guide the logs to the falls and putting in two sets of stop-logs in the dam to contract the water in the channel and improve the channel of logs, has been completed.

Stop-logs were put in the old slide, also new sheathing on the flat dam; at the old slide some new braces were put in and minor repairs done.

*Love Sick Lake.*—The boom here is about half mile long, it was overhauled and put in position.

*Deer Bay.*—The boom here was put in position and some minor repairs done.

*Buckhorn.*—The work of removing large boulders from the channel was completed. And the side pier at the foot of the slide was sheeted with 3-inch elm plank, some new sheeting was put in the slide, new stop-log posts, and the stiff boom were repaired.

*Fenelon Falls.*—The booms here were overhauled and put in good order; a new set of stop-logs in the slide, the repairs to the slide consisted in putting a new set of stop-logs, new planking on the platform and new sheeting. The winch used in sweeping out logs from the eddy was placed in working order.

I have the honour to be, sir,

Your obedient servant,

S. CLEGG,  
*Superintendent.*

## REPORT OF THE ST. MAURICE RIVER WORKS.

(By F. X. Thos. Berlinguet, superintending engineer.)

THREE RIVERS, October 10, 1904.

EUGÈNE D. LAFLEUR, Esq.,  
Acting Chief Engineer,  
Public Works of Canada, Ottawa.

SIR,—I have the honour to submit the following report on the works under my charge on the St. Maurice river and certain of its tributaries, for the fiscal year ended June 30, 1904.

The St. Maurice works were commenced in December, 1851, at Three Rivers. Shawinegan and Grand Mère, and additions thereto, to a limited extent, have been made nearly every year since.

The principal government works extend up the river for a distance of about one hundred and thirty miles from the outlet.

The fluctuation of the water level on the St. Maurice river, during the time of the floating of the logs for the commercial season of 1903, has been fairly good on the main river, but, on many of the tributaries, the duration of the freshets has been too short for the number of logs to be floated, consequently many of the logs were left for the following season.

The following is a statement of the dates of the opening and closing of the booms for the sluicing of the logs at Three Rivers, during the last few years :—

	Number of logs sluiced.
1903—Opening May 28, closing November 13. . . . .	1,351,587
1902—Opening April 23, closing November 11. . . . .	1,460,440
1901—Opening June 4, closing November 11. . . . .	629,982
1900—Opening April 4, closing October 22. . . . .	864,446
1899—Opening June 3, closing November 18. . . . .	882,004

At the low water season of 1903, after the drives had passed, the foundations of the various river structures were examined and a commencement made of the necessary repairs and improvements. The work was continued during the closed season of navigation and early spring months, in order that everything would be in readiness for the opening of the commercial season of 1904.

These works may be described as follows :—

*Pointe à Trudel booms.*—On the 40th mile of the St. Maurice river, 1,412 lineal feet of the booms, also three mooring piers, were examined and put in good condition for the coming season.

*Pointe Medeleine booms.*—On the 39th mile, 2,588 lineal feet of booms, also ten piers were examined, stone ballast was put in the piers where necessary. A number of boom chains were supplied.

*St. Jacques des Piles booms.*—On the 38th mile from the outlet, 2,176 lineal feet of 5 to 6 ply booms, also seven mooring piers and two anchor piers were put in good condition. A number of boom chains were supplied. Stone ballast was put in the piers where necessary, and ordinary repairs were made to boats, scows, stationhouse and fences.

*Ste. Flore booms.*—On the 34th and 35th miles on the St. Maurice, built since 1896, are situated above the sluicing gaps at Grand Mère, to check the floating of

4-5 EDWARD VII., A. 1905

the logs coming in too great quantity for the proper assorting of the logs at Grand Mère. The booms were stretched, for the first time, from creek Sauvageau, to 'Ile Arthur,' in 1898; and from the island to Pte. à Giguère in 1899, 3,997 lineal feet of three ply booms, 1,109 feet of four ply booms, and 202 feet of five ply booms were put in good condition, also ten mooring piers were repaired. A number of boom chains were supplied.

*Pointe à Paquin Booms.*—On the 33rd mile, 4,238 lineal feet of five and eight-ply booms were stretched in position where four mooring piers and three jam piers are built.

*Pointe à Trahan booms.*—On the western side of the river, on the 33rd mile, 2,400 lineal feet of booms were placed from shore to pier No. 4.

*Rapide des Hêtres booms.*—On the 26th mile, 600 lineal feet of three and two-ply booms were put in good condition, and the dam closing the eastern channel was raised a few feet and stone-filled.

*Pte. A. Bernard booms.*—On the 22nd and 23rd mile, two new mooring piers were built and fourteen mooring piers and three jamb piers were put in good condition. A number of boom chains was supplied.

*Shawinegan slide.*—On the 21st mile, a section of the bottom and sides of the slide were repaired by replacing the worn-out timber and planking with new material, the apron faced with hardwood, and the projecting spikes in the bottom and sides of the slide were countersunk.

*Ile aux Toutes booms.*—On the 17th mile, 11,805 lineal feet of one to seven-ply booms were put in good condition, and were left stretched for the winter to close the eastern channel above the island and the western channel below the said island. One jamb pier was raised and stone-filled.

*Cap aux Corneilles booms.*—On the 3rd mile, 1,246 lineal feet of eight-ply booms, 2,614 feet of six-ply booms, 294 feet of five-ply booms, 1,933 feet of four-ply booms and 1,005 feet of two-ply booms were put in good condition, also twenty-five piers were patched at the corners and on the faces where damaged. Posts were renewed, where worn out and decayed.

*Cap aux Corneilles western booms, Three Rivers sluicing gates.*—On the 2nd mile, a new jamb pier 30 x 40 x 30 feet also 1,400 lineal feet of three-ply booms were built to increase the sluicing of logs by adding more gaps. 108 lineal feet of seven-ply booms, 777 feet of six-ply booms, 402 feet of four-ply booms also seven mooring piers were examined and put in good condition.

1,003,428 logs for Grand Mère, 354,423 logs for Shawinegan, and 1,351,587 logs for Three Rivers, in all 2,709,438 logs have passed the government works during the season 1903.

*Eastern and Ile St. Quentin booms.*—At the outlet, 1,070 lineal feet of seven-ply booms, 1,300 feet of six-ply booms, 3,121 feet of five-ply, 4,750 feet of four-ply, 1,851 feet of three-ply booms, and 4,567 lineal feet of two-ply booms, also 43 mooring piers were examined and put in good condition, also the construction of an anchor pier in the eastern channel.

I have the honour to be, sir,

Your obedient servant,

F. X. THOS. BERLINGUET,

## BRIDGES AND ROADS.

It may be stated that, in the older provinces of the Dominion, the federal government has confined itself as a rule to take under its exclusive control and make provisions towards the construction and maintenance of important interprovincial road bridges and bridges required across waterways.

In the sparsely settled districts of the North-west Territories, the government of Canada has undertaken to provide for the erection and maintenance of ordinary road bridges over large streams; bridges that are urgently needed to afford uninterrupted communication through trails and highway of national importance, which neither the municipalities to be more immediately benefited by the structures, nor the territorial authorities most directly concerned, could be expected to erect and maintain at their sole expense.

During the last fiscal year works have been executed on the following bridges:—

## OTTAWA BRIDGES.

*Bridges at Ottawa, and roadway and bridge approaches between Ottawa and Hull.*

The roadway of Chaudière bridge, over the south Chaudière slide and hydraulic channels, was cleaned and the rubbish carted off. At the Middle street approach to this bridge, about 15 superficial yards of sand-stone paving were taken up and relaid, as this portion had settled from the proper grade.

The roadway of Union bridge was cleaned as occasion required. The sidewalk on the east side was relaid. Stringers 4 by 10 inches on the lower side, and 3 by 8 inches on the upper side, were laid on the iron floor beams; and upon these stringers were laid two courses of pine plank, the lower being 3 inches and the upper 2 inches thick. The top course of the roadway was relaid with 3-inch hemlock plank.

The roadway of the Hull slide bridge was cleaned at different times when found necessary.

The sidewalk along the causeway leading to Hull, from the stone dam to a point 150 feet westward, was relaid. Cross sills 3 by 6 inches and 3-inch covering were used for this work. The wheel guards, hand-rails, &c., were patched where found defective. The waste water pipes and gutter grates were kept clean, and from time to time, this thoroughfare was cleaned throughout its entire length. At certain places where depressions in the roadway existed, the granite paving blocks were raised and relaid to proper grade.

During the winter months, surplus ice and snow were removed from the sidewalks and roadways of the different bridges and the causeway leading to Hull, for convenience of those having occasion to use these thoroughfares.

*Laurier Bridge Approaches, Ottawa.*—The approach to the Laurier bridge over the Rideau canal, between Nicholas street and the bridge, was laid with Nepean sand-stone paving blocks, the length being about 265 feet. The surface at sub-grade was thoroughly tamped, and the paving was then laid on a bed of sand, the top joints being well grouted with cement mortar. Granolithic sidewalks were also built on this approach, on both sides, from Nicholas street westward, to join those on the bridge.

*Dufferin Bridge, Ottawa.*—A supply of paving blocks, sufficient to pave the roadway of this bridge has been purchased and these are piled in close proximity to the eastern end of the bridge.



4-5 EDWARD VII., A. 1905

## ONTARIO AND QUEBEC.

## DES JOACHIMS BRIDGE APPROACHES.

The only outlay chargeable to this work was a payment for the use of a power derrick, when building the retaining walls on the Quebec side of the approach to the interprovincial bridge over the Ottawa, at Rapides des Joachims.

## PORTAGE DU FORT BRIDGE.

Portage du Fort is on the north shore of the Ottawa river, in the county of Pontiac, 60 miles, above the city of Ottawa.

At this place an island divides the River Ottawa into two channels, called the North and South channels, the village of Portage du Fort is on the north shore of the North channel.

In the fall of 1901, with contributions from local government of Quebec and Ontario, the department completed a steel bridge across the south channel. The bridge over the north channel was then unsafe for traffic, and it being considered as forming part of the interprovincial bridge uniting the two provinces, the department decided to also renew this bridge with a steel structure of one span 200 feet in length.

In June, 1903, a contract was entered into with Mr. Thomas Moran, of Arnprior, for the construction of the two abutments and approaches on both shores for the sum of \$10,797. The contract for the steel work was awarded on August 25, 1903, to the Locomotive & Machine Co., of Montreal, for the sum of \$9,750.

The work on the masonry abutments and approaches was started in July, 1903, and at the end of November of that year, the abutments were nearly completed and ready to receive the steel superstructure. The abutments are built U-shape, on a rock foundation, of first class rock faced ashlar masonry, laid in Portland cement mortar of the best quality.

The approaches consist of rip-rap walls sloping one in one on their outer faces filled between with earth, and 24 feet wide at top.

At the end of the fiscal year, the erection of the steel superstructure had not been commenced.

The amount paid to the masonry contractor up to June 30, 1904, was \$9,936. Minor repairs to the old bridge, in order to keep it open for traffic pending the construction of the new bridge, the superstructure and contingencies amounted to \$820.72, making a total expenditure of \$10,750.72, for the year 1903-04.

## NORTH-WEST TERRITORIES.

## LANGEVIN BRIDGE, CALGARY.

Calgary, district of Alberta, is situated on the Bow river, also on the main line of the Canadian Pacific Railway. The Bow river is crossed here by a Howe Truss bridge of three spans and a trestle approach on the south side.

During the fiscal year 1903-04, the sum of \$700 was expended in re-flooring the bridge.

## EDMONTON BRIDGE.

Edmonton is situated in Northern Alberta, on the north side of the north branch of the Saskatchewan river, 194 miles north of Calgary.

## SESSIONAL PAPER No. 19

A bridge was constructed across the Saskatchewan at Edmonton, consisting of three piers and two abutments of concrete, and a steel superstructure. It is a combined railway and traffic bridge, completed in 1900.

During the fiscal year 1903-04, the flooring was renewed at a cost of \$1,550.

## BATTLE RIVER BRIDGE.

A bridge was built across the Battle river, at Battleford, in 1890 and collapsed in 1900. A steel superstructure was built in 1902, on the old wooden piers.

In the spring of 1904, the water rose to 18 feet above low water, or to within one foot of the lower chords. The strong current undermined the foundation of the north abutment, the sum of \$500 was expended on urgent repairs.

## HYDROGRAPHIC SURVEY.

## RIVER ST. LAWRENCE.

During the fiscal year 1903-04, the main triangulation work between Grondines and Pointe Platon was all completed and the re-triangulation of Lake St. Peter begun, but the latter could not be completed before the winter owing to unfavourable weather and difficulties encountered with.

Gaugings were also recorded at the different gauge stations between Sorel and Pointe Platon until the middle of November last.

The St. Lawrence river was sounded between Lotbinière and Pointe Platon, all but a gap of about two miles between the head and the foot of the Richelieu Rapids. The sounding party was called to winter quarters on October 15 last, as the weather was no more favourable for outdoor work.

Few current observations were also taken.

During winter the entire staff was kept busy plotting the summer work, making water profiles, calculating main triangulation and latitudes and departures, latitudes and longitudes, &c.

In the spring all the working plans were complete and up to date as far as Pointe Platon.

The charts for publication are progressing rapidly and are now ready for the printer as far as Batiscan.

It was only on June 1, 1904, that outdoor work could be begun.

From this date until June 30, the main triangulation staff has reset gauges at four gauge stations between Lotbinière and Pointe Platon and has dressed all the main triangulation stations in this same district for the use of the sounding party. Observations were also made in the vicinity of Grondines in order to tie in the six new lighthouses built by the Department of Marine and Fisheries during the winter.

During June the soundings were also completed in the Richelieu Rapids and quite a few doubtful lines sounded in the preceding fall were sounded over again to ascertain accuracy.

The amount expended during the fiscal year was \$281,071.01.

This amount does not comprise stationery, trips of Ottawa officials and the pay of the crew of the 'de Lévis.'

4-5 EDWARD VII., A. 1905

CEMENT LABORATORY,  
DEPARTMENT OF PUBLIC WORKS,  
August 11, 1904.

E. D. LAFLEUR, Esq.,  
Acting Chief Engineer,  
Department of Public Works.

SIR,—I have the honour to inclose herewith the annual report of this branch of the department for the year ended June 30, 1904.

I am, sir,  
Your obedient servant,

GEO. E. PERLEY,  
*Engineer in charge.*

Since June 30, 1903, all samples submitted to this office have been fully tested and reported upon.

Information has been supplied to the Railways and Canals, Marine Department, Militia Department, also the architects and engineers of the department, contractors and manufacturers.

A crushing machine has been installed in the laboratory and a numebr of 8-inch cubes were made in the laboratory and the elevator in Montreal, the latter were shipped here, a great number have been tested. These cubes were made under varied conditions as will be noted on their respective sheets.

New offices have been fitted up for the general physical and chemical test of cement thus allowing room for crushing machine, and a transverse testing machine for beams of reinforced concrete (20) twenty feet long by (12) twelve inches by (12) twelve inches, this machine will be installed in the old office on a concrete foundation allowing the beams which are manufactured elsewhere being passed through a window by means of an overhead traveller.

The work of this branch has reached such large proportions that another assistant has been called for, from six weeks to three months is required to instruct an assistant in the manipulation of the method of making uniform briquettes, the individual equation playing a very important part in the making of them, it requires one person's whole time, and continual practice and personal ingenuity to bring the briquettes to perfection.

In March of this year the testing laboratories of the United States government were visited and various testing machines were inspected and all the latest methods adopted by the United States were fully investigated thus enabling this laboratory to keep abreast of the times.

The improvement of last year in the methods adopted by the American Society of Civil Engineers has been very satisfactory. It would be well if this method was adopted by the various institutions in Canada. It would minimize the great variation which was found in one cement tested by the various institutions, a law of uniformity might be passed compelling all laboratories to use one and the same method thus eliminating the irregularity.

A number of crushing tests have been made of bricks, mortar, &c., for the architects, also general informations, the engineers of the department have been assisted in the best method to adopt in mixing mortar, concrete, &c., a number of contractors have been assisted in the same manner.

SESSIONAL PAPER No. 19

CONCRETE BLOCKS MADE IN THE LABORATORY.

A separate mixture of 1 part Star cement, 2 parts of Chateauguay sand, 5 parts of  $\frac{1}{2}$ -inch stones and smaller was used for each block. The dimensions of each block are 8" x 8" x 8". They were broken at 12 months old after being treated in the following way :—

1. (A.)—KEPT in the Laboratory.

Block Number.	Salt in Water.	Made.	Crushed.	First crack.	Complete disintegration.
		1903.	1904.	Tons.	Tons.
1		January 12.....	January 21.....	40	90
3		" 13.....	" 19.....	86	89
5		" 15.....	" 18.....	103	103
7	1	" 19.....	" 19.....	72	80
9	2	" 21.....	" 21.....	56	71
11	5	" 22.....	February 3.....	55	75
13	7	" 23.....	January 20.....	82	85
15	10	" 26.....	" 22.....	67	86
17	15	" 27.....	" 18.....	102	102

(B.)—MADE in the laboratory, put immediately outside for 24 hours, then removed from the moulds and kept in the laboratory till broken.

Block Number.	Salt in Water.	Made.	Crushed.	First crack.	Complete disintegration.
		1903.	1904.	Tons.	Tons.
2		January 12.....	January 19.....	70	71
4		" 13.....	" 19.....	77.	80
8	1	" 19.....	" 20.....	50	68
10	2	" 21.....	" 18.....	57, 5	75
12	5	" 22.....	" 18.....	78	88
14	7	" 23.....	February 3.....	75	94
16	10	" 26.....	January 20.....	61	85
18	15	" 27.....	February 3.....	72	89

2. For the following, coal ashes were used instead of stone in the same proportions:— 1, 2, 5.

(A.)—KEPT in the Laboratory.

Block Number.	Salt in Water.	Made.	Crushed.	First crack.	Complete disintegration.
		1903.	1904.	Tons.	Tons.
19		February 6.....	February 3.....	43	50
22	1	" 11.....	" 3.....	36	68
23	2	" 11.....	" 3.....	57	65
24	3	" 13.....	January 20.....	37	69
25	5	" 13.....	" 20.....	37	64
33	7	" 19.....	" 21.....	48	54
34	10	" 19.....	" 19.....	55	65

4-5 EDWARD VII., A. 1905

(B.)—MADE in the Laboratory, put immediately outside for 24 hours, then taken out of the moulds and kept in the Laboratory till broken.

Block Number.	Salt in water.	Made.	Crushed.	First crack.	Complete disintegration.
		1903.	1904.	Tons.	Tons.
20		February 6	February 3	38	53
21		" 9	January 18	59	59
26	1	" 16	" 19	65	67
27	2	" 17	February 3	30	51
28	3	" 17	" 3	41	62
29	5	" 17	" 3	20	53
30	7	" 17	" 3	70	77
31	10	" 18	" 3	41	75
32	15	" 18	" 3	21	61

Blocks made in Montreal and crushed in the Cement Testing Laboratory at Ottawa.

All dimensions 8" x 8" x 8". Crushed 16 months old.

Proportions : 1 Star Cement.

2 Chateauguay Sand.

3 5- $\frac{1}{2}$  inch crushed limestone, including screenings as out of crusher.

A. (1.)—KEPT in office.

Block Number.	Made.	Crushed.	First crack.	Complete disintegration.
	1903.	1904.	Tons.	Tons.
1	January 7	April 7	6	22 5
2	" 7	" 7	6	18
3	" 7	" 7	5	25

(2.)—KEPT outside.

4	January 7	April 7	5	27
5	" 7	" 7	25	35

Proportions 2, 2, 5.

(3.)—KEPT inside.

6	January 15	April 15	38	51
7	" 15	" 15	35	57
8	" 15	" 15	26	50

(4.)—KEPT outside.

9	January 15	April 15	40	74
10	" 15	" 15	39	67

## SESSIONAL PAPER No. 19

B. The  $\frac{1}{2}$ -inch stone (same as above) was sifted on a sieve containing 23 holes to an inch and made of wire  $\frac{1}{16}$  inch diameter. What was left on the sieve was used for the following samples 50 to 57.

(1.)—KEPT in office.

Block Number.	Made.	Crushed.	First crack.	Complete-disintegration.
	1903.	1904.	Tons.	Tons.
50	January 23.....	April 23.....	28	33
51	" 23.....	" 23.....	30	54
52	" 23.....	" 23.....	33	58
53	" 23.....	" 23.....	32	63

KEPT outside.

54	January 23.....	April 23.....	22	37
55	" 23.....	" 23.....	24	44
56	" 23.....	" 23.....	22	42
57	" 23.....	" 23.....	24	45

2.5 inch crushed limestone as out of crusher.

Mixed without salt in water.

1. (A.)—KEPT in office.

Block Number.	Made.	Crushed.	First crack.	Complete-disintegration.
	1903.	1904.	Tons.	Tons.
11	January 16.....	April 16.....	45	50
12	" 13.....	" 16.....	23	51
13	" 13.....	" 16.....	34	54

(2.) Mixed, put into moulds in office and put outside immediately; kept outside from January 13, 1903, till date of crushing.

14	January 13.....	April 13.....	15	46
15	" 13.....	" 13.....	15	41
16	" 13.....	" 13.....	15	23

(3.) Mixed in office, put into moulds outside (20°) and remained till crushed.

14	January 12.....	April 12.....	10	44
15	" 12.....	" 12.....	15	40
16	" 12.....	" 12.....	26	42

(4.) Mixed in office and put immediately outside; frozen once, thawed once, then kept outside.

17	January 12.....	April 12.....	25	46
17	" 12.....	" 12.....	24	54
18	" 12.....	" 12.....	25	36
19	" 12.....	" 12.....	20	40

4-5 EDWARD VII., A. 1905

(5.)—Frozen twice, thawed twice, kept outside till crushed.

Block No.	Made.	Crushed.	First Crack.	Complete disintegration.
	1903.	1904.	Tons.	Tons.
20	January 12.....	April 12.....	25	41
21	" 12.....	" 12.....	22	44
22	" 12.....	" 12.....	49	80

(6.)—Frozen three times, thawed three times, then kept outside till crushed.

23	January 12.....	April 12.....	26	69
24	" 12.....	" 12.....	36	62
25	" 12.....	" 12.....	20	43

(7.)—Frozen four times, thawed four times, then kept outside till date of being crushed

26	January 16.....	April 16.....	35	59
27	" 16.....	" 16.....	40	44
28	" 16.....	" 16.....	45	48

(8.)—Frozen five times, thawed five times then kept outside till crushed.

29	January 16.....	April 16.....	36	56
30	" 16.....	" 16.....	45	50
31	" 16.....	" 16.....	30	34
29°	" 21.....	" 21.....	55	64
30°	" 21.....	" 21.....	36	50

(B.) Mixed and put into moulds in the office, and kept there for fifteen hours, then put outside in order to be frozen, and inside to be thawed.

(1.) KEPT outside.

32	January 20.....	April 20.....	70	76
33	" 20.....	" 20.....	27	36
34	" 20.....	" 20.....	54	81

(2.) FROZEN once, thawed once, then kept outside.

35	January 20.....	April 20.....	44	93
36	" 20.....	" 20.....	39	82
37	" 20.....	" 20.....	50	77

(3) FROZEN twice, thawed twice, then kept outside.

38	January 20.....	April 20.....	27	62
39	" 20.....	" 20.....	45	66
40	" 20.....	" 20.....	25	27

(4.) FROZEN three times, thawed three times, then kept outside.

41	January 21.....	April 21.....	44	61
42	" 21.....	" 21.....	30	49
43	" 21.....	" 21.....	25	69

## SESSIONAL PAPER No. 19

(5.) FROZEN four times, thawed four times, then kept outside.

Block Number.	Made.	Crushed.	First crack.	Complete Disintegration
	1903.	1904.	Tons.	Tons.
44	January 21.....	April 21.....	38	51
45	" 21.....	" 21.....	19	54
46	" 21.....	" 21.....	27	47

(6.) FROZEN five times, thawed five times, then kept outside.

47	January 21.....	April 21.....	27	50
48	" 21.....	" 21.....	25	50
49	" 21.....	" 21.....	50	76

## (C.) MIXED WITH SALT AND WATER.

These blocks were mixed and put into moulds in the office, then stored immediately outside till sent to Ottawa. The moulds were taken off the day after; the material used was not frozen at the time of mixing.

## PERCENTAGE OF SALT IN WATER BY WEIGHT.

Block Number.	Salt in Water.	Made.	Crushed.	First crack.	Complete disintegration
		1903.	1904.	Tons.	Tons.
58	2.0	February 2.....	May 2.....	18	51
59	2.0	" 2.....	" 2.....	25	68
60	2.0	" 2.....	" 2.....	18	49
61	2.0	" 2.....	" 2.....	29	51
62	5.0	" 3.....	" 3.....	49	75
63	5.0	" 3.....	" 3.....	51	60
64	5.0	" 3.....	" 3.....	26	77
65	5.0	" 3.....	" 3.....	41	75
66	7.5	" 3.....	" 3.....	27	60
67	7.5	" 3.....	" 3.....	69	85
68	7.5	" 3.....	" 3.....	21	49
69	7.5	" 3.....	" 3.....	44	61





APPENDIX TO PART IV

---

REPORT

ON THE

RIVER ST. LAWRENCE SHIP CHANNEL

BETWEEN

MONTREAL AND QUEBEC



## PROVINCE OF QUEBEC.

## RIVER ST. LAWRENCE SHIP CHANNEL,

OTTAWA, December 14, 1904.

SIR,—According to your instructions, I beg to present the following annual report on the operations for the improvement of the River St. Lawrence Ship Channel during the fiscal year ended June 30, 1904.

Physical features.

Present navigation.

General information.

History of the work.

Present project.

Cost of Ship Channel to date.

Progress of the dredging operations at the date of writing.

Division I, opened for navigation.

Estimate, 30 foot channel, December, 1904.

Dredges.

General Notes.

Sorel Ship Yard.

Table I. Abstract of operations.

Table II. Classification of Disbursements.

Dredging plant.

I have the honour to be, sir,

Yours obediently,

F. W. COWIE,

*Superintending Engineer.*

EUGÈNE D. LAFLEUR, Esq., C.E.,

Acting Chief Engineer,

Department of Public Works, Ottawa.



## RIVER ST. LAWRENCE SHIP CHANNEL.

## PHYSICAL FEATURES.

The distance between Montreal and Quebec by the River St Lawrence ship channel is 160 miles. Of this distance about 65 per cent is natural deep water not requiring any improvement.

From Montreal to Three Rivers, 82 miles, the tide is not appreciable.

From Three Rivers to Batiscan, 20 miles, the tide can always be felt, but owing to uncertainty of time and height, it cannot be depended upon for navigation.

From Batiscan to Portneuf, 22 miles, during six hours out of every twelve, half-tide giving an additional depth of from  $1\frac{1}{2}$  to 4 feet, may be taken advantage of, by passing during those six hours.

From Portneuf to Quebec, 36 miles, there is a tide of from 9 to 15 feet, giving tidal navigation for about nine hours out of every twelve.

The water in the river has a very great annual fluctuation. The average height above ordinary low water is for May,  $6\frac{1}{2}$  ft. ; June,  $4\frac{1}{2}$  ft. ; July,  $3\frac{3}{4}$  ft. ; August,  $1\frac{3}{4}$  ft. ; September, 1 ft. ; October,  $\frac{1}{2}$  ft. ; November,  $\frac{3}{4}$  ft.

The total fall in water level in the river at ordinary low water, between Montreal and Quebec, is about 29 feet.

From Montreal to Three Rivers, 11 ft. ; from Three Rivers to Batiscan,  $3\frac{1}{2}$  ft. ; from Batiscan to Portneuf,  $10\frac{1}{2}$  ft. ; and from Portneuf to Quebec, 4 ft.

The current varies throughout. It is strongest at St. Mary's Current in Montreal Harbour, at Cap à la Roche, and at the Richelieu Rapids. It is quite gentle in Lake St. Peter.

The general average is about  $2\frac{1}{2}$  miles per hour.

The River St. Lawrence between Quebec and Montreal is usually free from ice about April 10, and closed to traffic about November 25, making the season of navigation about  $7\frac{1}{2}$  months.

## PRESENT NAVIGATION.

Navigation between Quebec and Montreal is still governed by the depth of water, as found from day to day, in the uncompleted portions of the 30 foot ship channel.

At these places there is still a depth of only  $27\frac{1}{2}$  feet at ordinary low water, and a minimum width of 300 feet.

In the distance between Montreal and Quebec of 160 statute miles, the length requiring dredging to give 30 feet depth at extreme low water is about  $62\frac{1}{2}$  miles. In all, 42 miles has been completed to 30 feet depth and with the exception of a few miles in the straight reaches of Lake St. Peter, also widened to 450 feet. Except, therefore, in the  $20\frac{1}{4}$  miles yet to be dredged, vessels now run free, at full speed and with perfect safety.

In these completed portions of the channel there is a depth of 30 feet at the extreme low water of 1897, giving nearly 4 feet greater draught for navigation than in the present channel.

The improved channel is being widened to a minimum of 450 feet, and at the bends of from 500 to 750 feet.

The completed sections are being marked with permanent range lights and gas buoys, for the safety of day navigation, and for facilitating navigation by night for

4-5 EDWARD VII., A. 1905

all vessels upward bound as well as light draught coal ships outward.

The division between Sorel and Montreal Harbour has been completed throughout. A vessel now, of no matter how great a tonnage that can pass Lake St. Peter, may proceed with perfect safety to her berth in Montreal. The very largest ships of the Allan and Dominion Lines have this year on several occasions, reached their dock in Montreal after 11 o'clock at night.

It is unfortunate that similar improvements as have been completed between Sorel and the eastern limit of Montreal Harbour, have not yet been made in the channel opposite Longueuil in Montreal Harbour.

During the season of 1904, the water has been exceptionally high, the lowest stage reached during the season of navigation giving a depth of 28' 1" in the present, or 27½ foot channel.

The average depth of water available for navigation with the greatest and least depths in each year, from May to November, since 1890, is given in the following table :—

Year.	Average depth for each month, 27½ foot channel.							From Sorel gauge, during each year (May to Nov.)	
	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
1890.....	35 6	35 3	31 9	30 6	30 9	29 9	30 6	37 0	29 0
1891.....	34 6	31 3	29 9	29 9	30 0	28 3	28 3	36 9	27 3
1892.....	31 0	31 9	31 6	30 6	28 9	28 3	28 3	33 6	27 3
1893.....	36 0	34 3	30 9	29 9	29 6	28 6	28 0	37 6	27 6
1894.....	34 6	31 9	31 0	29 2	28 3	28 9	29 0	36 0	27 7
1895.....	33 3	31 3	28 3	28 3	27 6	26 9	26 9	34 6	25 10
1896.....	33 6	30 6	28 9	28 0	27 6	27 9	29 0	37 0	27 4
1897.....	35 6	32 6	30 3	29 3	28 0	27 0	27 6	37 0	26 5
1898.....	31 6	30 9	29 8	28 6	28 2	28 3	28 6	32 1	26 9
1899.....	36 2	31 9	30 3	28 6	27 6	28 0	27 9	37 9	26 9
1900.....	33 6	30 9	30 6	29 6	28 1	28 9	29 2	35 9	27 4
1901.....	34 3	31 10	29 2	28 3	27 7	27 4	27 3	36 3	26 6
1902.....	33 2	32 2	32 2	29 4	28 1	28 1	29 0	34 1	27 6
1903.....	32 0	30 11	30 5	29 5	28 4	29 0	27 11	32 8	26 11
1904.....	36 3	34 5	30 9	29 5	29 5	30 4	29 3	37 4	28 1

## GENERAL INFORMATION.

The whole of the ship channel between Longue Pointe, the eastern limit of Montreal Harbour, and Quebec, where dredging has been done or where required, was thoroughly tested or swept during the season of 1904.

A special twin screw steamer, with an efficient staff of engineers, was detailed for this work, and kept busy throughout the entire season.

The problem of sweeping the ship channel thoroughly is a matter of great importance and difficulty. The method of work is to suspend a heavy steel roller 40 feet long under a scow to the required depth, and to sweep along the channel against the current, running parallel lines so as to cover the whole of the ground. In tide water the depth is changing constantly. In fogs or smoky weather the work is interrupted because the shore marks cannot be seen for guidance in running the parallel lines. When there is any sea running the work naturally has to be stopped. As the work is always done in the channel, a great deal of difficulty and interruption is caused by passing vessels. The extent of the work may be inferred from the fact that where the channel is 300 feet wide, eight lines are required to be run, and where the channel is wider it takes from eleven to fifteen lines.

## SESSIONAL PAPER No. 19

This work, as well as assistance in the carrying out of the dredging operations was carried on under the direction of Mr. V. W. Forneret, C.E., assisted by Mr. N. B. McLean, C.E. The members of the Shipping Federation of Canada, personally inspected the operations of the sweeping of the channel and expressed complete satisfaction at the manner and completeness with which the work was being carried on.

The semaphore at St. Jean des Chaillons was maintained in operation, as usual, from July 1 until the close of the season of navigation. This semaphore indicates the depth of water in the dredged cut at Cap à la Roche.

The semaphore at St. Nicolas was also kept in operation for the same period to indicate the depth of water, from time to time, over the undredged St. Augustin Bar.

In the River St. Lawrence ship channel proper there were during the season of navigation of 1904, only five accidents to ocean going vessels. None of these were in any way due to the channel.

Apart from these, a few minor accidents happened in the harbours of Montreal and Quebec.

The following is a list of the accidents in the ship channel :—

'Bonavista'—Port St. Francis. . . . .	At anchor. Struck by passing dredge being towed. Slight damage.
'Cape Breton'—'Canada'—Sorel anchor- age. . . . .	Collision. Slight damage to 'Cape Breton.' 'Canada,' a passenger river steamer, sunk, with loss of life.
'Vancouver'—Lake St. Peter. . . . .	Took sheer and grounded in soft mud outside of channel. Floated after great difficulty by dredging.
'Turret Chief'—Portneuf. . . . .	Grounded at night while drawing only 9 feet, outside of channel. Pilot admitted defective eyesight.
'Louisburg'—Champlain. . . . .	Grounded outside channel on sand bank. No damage.

During the season of 1904 the total number of ocean going vessels passing up and down the channel was 796, or six less than during the previous season.

The total tonnage for the season amounted to 1,856,697 tons, a decrease from last year of  $1\frac{3}{4}$  per cent.

A feature of the business on the St. Lawrence for 1904, was the large coal traffic between the Nova Scotia mines and Montreal. In all, this trade amounted to 1,401,611 tons, or an average of nearly two steamers per day for every day in the season.

## HISTORY OF THE WORK.

Before the commencement of any dredging operations, the depth on the flats of Lake St. Peter was about 11 feet at the ordinary autumn low water of that time.

The actual improvements were commenced in 1844 and continued by the government as a public work until 1846 and abandoned the following year owing to the opposition to the location of the channel.

Legislation was passed in 1850 transferring the plant and authorizing the Montreal Harbour Commissioners to borrow money and proceed with the works as they should deem best.



4-5 EDWARD VII., A. 1905

From 1851 to 1888 all operations for the improvement of the St. Lawrence between Montreal and Quebec, were carried on by the Montreal Harbour Commissioners, the interest on the cost of the work being defrayed by a tonnage tax on all vessels drawing 10 feet and upwards.

In 1888 the channel from Montreal to Cap à la Roche was completed to 27½ feet at ordinary low water, and from there to Quebec 27½ feet at half tide.

The government decided in 1888 to re-adopt the River St. Lawrence ship channel as a public work.

Under the Public Works Department, from 1888 until 1898 the work begun by the Harbour Commissioners was continued.

The difficult rock work at Cap à la Roche and Cap Charles, was completed as designed.

Almost all of the dredged portions of the river, except the channel in Lake St. Peter, were cleaned up or deepened, and many curves and narrow places were widened.

Surveys were made, and between Cap Charles and Quebec, to avoid the necessity of waiting for the tide, channels were dredged through several shoals.

The extraordinary low water of 1895 and 1897, and the increase in the size of vessels, urgently called for a wider and deeper channel.

In 1897 it was decided to construct new plant consisting of large and powerful dredges, tugs, barges, &c., suitable for channel improvement on a large scale.

#### PRESENT PROJECT.

In 1899 the dredging plant was in a position to warrant the commencement of a more extensive plan of operations; and as two new dredges of a large type, with tugs and plant had proved their efficiency, two powerful steel dredges designed according to the best practice and experience in this identical work, with tugs, &c., were almost completed and two more, to complete the six required, were authorized.

With a proper dredging fleet assured, and the necessary shops and ship yard at Sorel available, the work of the 30-foot channel was undertaken.

The low water of 1897, the lowest on record, except the short period of extraordinary low water of 1895, was adopted as the plane of river level at which the channel would be made 30 feet in depth.

It was also decided to make the channel as wide as could be dredged in one cut, viz., 450 feet.

The present object of the dredging operations is to obtain in the shortest possible time a ship channel between Montreal and Quebec for safe 30-foot navigation.

The minimum width for the tangents has been fixed at 450 feet, but the bends are widened out to from 500 to even 750 feet. The dredging is being done to give a clear depth of 30 feet at the E.L.W. of 1897.

The navigable depth in this channel as being dredged, during the season of 1904, was as follows :—

May.	June.	July.	Aug.	Sept.	Oct.	Nov.
39' 11"	38' 1"	34' 5"	33' 1"	33' 1"	34' 0"	32' 11"

The greatest depth from May to November was 41' 0" and the least, at the end of November, 31' 9".

The total distance between Montreal and Quebec is 160 miles. The length requiring dredging between Longue Pointe, the eastern limit of Montreal Harbour, and Quebec Harbour, is about 62½ miles.

## SESSIONAL PAPER No. 19

## COST OF SHIP CHANNEL TO DATE.

TABLE showing the Total Cost of the Dredging and Plant, and the Quantities Dredged up to June 30, 1904.

	Cost of Dredging.	Expenditure for plant, shops, surveys, &c.	Quantities dredged.
<i>Montreal Harbour Commissioners—1851 to 1888.</i>	s      cts.	s      cts.	Cubic yards.
Dredging Montreal to Cap à la Roche to 27½ feet at ordinary low water, and from Cap à la Roche to Quebec to 27½ feet at half tide.....	3,402,494 35	534,809 65	19,865,693
<i>Department of Public Works.</i>			
Dredging consisting of widening and cleaning up of channel; deepening Cap à la Roche to Cap Charles to 27½ feet at ordinary low water and dredging at Grondines, Lotbinière, and Ste. Croix—1889 to June 30, 1899.....	829,583 08	486,971 79	3,558,733
Present Project:—Dredging channel between Montreal and Quebec to 30 feet at lowest water of 1897; also widening to a minimum width of 450 feet and straightening—			
Fiscal year 1899-1900.....	100,191 01	265,270 78	1,107,894
" 1900-01.....	136,680 83	287,040 04	2,479,385
" 1901-02.....	185,429 80	479,731 47	3,098,350
" 1902-03.....	253,776 55	277,703 50	6,544,605
" 1903-04.....	276,958 59	308,765 44	4,619,260
	5,187,114 21	2,640,292 67	41,273,920

PROGRESS of the Dredging Operations at the date of writing, the close of the season of 1904.

Locality.	Total Length Requiring Dredging.	Length Dredged in 1904.	Total Length of 30 Feet Channel Dredged.	Length yet to be Dredged.
	Miles.	Miles.	Miles.	Miles.
Division 1:— Montreal Harbour to Sorel.....	21·80		21·80	
Division 2:— Sorel to Bastican.....	12·45	3·10	8·00	4·45
Division 3:— Lake St. Peter.....	18·00	1·80	7·70 13·60	6·70
Division 4:— Bastican to Quebec.....	10·00		0·90	9·10
	62·25	4·90	42·00	20·25

\* Not widened.      † Widened.

4-5 EDWARD VII., A. 1905

From Batiscan to Quebec the tide is available, and by taking advantage of it, vessels of heavier draught may pass.

During the summer of 1903 the practical completion of Division I. was announced. This gives a channel between Sorel anchorage and Longue Pointe, the eastern limit of Montreal Harbour, of a depth of 30 feet at the extreme low water level reached in 1897, and having a minimum width of 450 feet.

In the 40 miles of navigation between these two points there are now but sixteen tangents, joined by easy curves where the channel is widened to from 500 to 750 feet.

DIVISION I. OPENED FOR NAVIGATION.

In the month of October, 1903, the dredging in Division I. having been practically completed, and the work thoroughly tested, it remained for the Department of Marine and Fisheries to give the necessary aids to navigation so as to make the improved highway fully available.

In anticipation, this department had early in the season reported on the position and character of the lighthouses that would be required to permanently mark the channel as soon as completed.

On November 1 the lighthouses were put in operation, and gas buoys were placed to mark the bends and narrow places.

The benefit to navigation was immediately apparent. In the month of November, when time was of great value, several large ships, instead of anchoring at Sorel, took advantage of the improved and well marked channel and proceeded to Montreal safely making their docks before midnight.

It is not expected that the large transatlantic ships outward bound will sail from Montreal during the night. The time for sailing for these large vessels is usually fixed in advance. Coal ships, however, and other vessels of light draught, will be able to sail from Montreal in clear weather at any time when they are ready. Inward bound ships will be able to avail themselves of the improvements throughout the channel as soon as completed.

The utility of the work done on the River St. Lawrence is evident. Advantage of every improvement is immediately taken, and at the present time several very large ships are being built with a view to the expected increased accomodation.

ESTIMATE, 30 Foot Channel, December, 1904.—Montreal Harbour to Quebec.

Locality.	LENGTH OF DREDGING.		Cubic yards yet required to be done.
	Required.	Done.	
	Miles.	Miles.	
Division 1 :—			
Longue Pte. to Pte. aux Trembles (en haut).....		5 05	
Ile Ste. Thérèse.....		0 40	
Varennes to Cap St. Michel.....		3 00	
Cap St. Michel to Verchères.....		4 50	
Verchères Traverse.....		1 10	
Verchères to Contrecoeur.....		1 70	
Contrecoeur Channel.....		6 05	
Total.....		21 80	

## SESSIONAL PAPER No. 19

ESTIMATE, 30 Foot Channel, December, 1904—Montreal Harbour to Quebec —  
*Concluded.*

Locality.	LENGTH OF DREDGING.		Cubic yards- yet required to be done.
	Required.	Done.	
	Miles.	Miles.	
Division 2:—			
Sorel to Ile de Grace .....	0 80	3 60	350,000
Stone Island.....		1 10	
Ile au Raisin.....	0 25		40,000
Lake St. Peter (see 30).....			
Port St. Francis.....	0 15	0 35	70,000
Three Rivers.....		0 50	
Cap Madeleine to Becancour.....	1 55		620,000
Becancour to Champlain.....	0 50	1 75	200,000
Champlain to Pte. Citrouille.....	0 60	0 70	400,000
Batture Perron.....	0 60		450,000
Total.....	4 45	8 00	2,130,000
Division 3:—			
Lake St. Peter.....	6 70	7 70 13 60	13,000,000
Total.....	6 70	11 30	13,000,000
Division 4:—			
Batiscau to Cap Levrault.....	3 00		1,300,000
Cap à la Roche Channel.....	2 00		1,200,000
Pouillier Rayer.....	1 20		500,000
Cap Charles.....	0 90		500,000
Gronelines.....	0 80		200,000
Lotbiniere.....		0 40	
Cap Santé.....		0 20	
Ste. Croix.....	0 60	0 30	150,000
St. Augustin.....	0 60		150,000
Total.....	9 10	0 90	4,000,000
Totals.....	20 25	42 00	19,130,000

Not widened. †Widened.

## DREDGES.

*Laval*.—Of the fleet of ship channel dredges, this is the oldest. The hull is of wood, constructed in Ottawa in 1894. The buckets are made of cast steel for work in rock and other hard material.

During the winter 1903-04, the above water parts of the hull, the timbers and 'A' frames were rebuilt at the government ship yard at Sorel.

The details of the operations of this dredge for the fiscal year were as follows :—

On July 1, 1903, the *Laval* was engaged in cleaning up the slight filling in of sand, which occurs only at Champlain. This was completed on July 3.

The dredge was then taken to Pointe aux Trembles (en haut) to work on the Longue Pointe curve. The material, a mixture of black sand and stiff clay with embedded stones, was very difficult and on November 20, the dredge was completely used up and had to be taken to winter quarters for a thorough overhaul.

Owing to the extent of the repairs, and the rebuilding, the *Laval* was not ready in 1904, until June 8, when she was taken to work at the widening and straightening of the channel between Becancour and Ile Bigot, where she continued until the end of the fiscal year.

4-5 EDWARD VII., A. 1905

Considering the difficult material, and the state of the machinery, the *Laval* made satisfactory progress. In the total of 141 days, during which this dredge was at work, her machinery was in actual operation 67 per cent of the full working time.

The total quantity dredged amounted to 217,150 cubic yards, at a cost of \$32.-615.17 or  $15\frac{91}{100}$  cents per yard.

*Laurier*.—The hull of this dredge is also of wood, having been constructed at the government works at Sorel, in 1897. Her buckets were of large size built up from cast steel bottoms, for working in soft material. As almost all the work in soft material was completed, the buckets were changed during the winter of 1903-04, and replaced by smaller and stronger buckets, having sufficient teeth for working in hard-pan, &c.

From July 1903, until September 24, the *Laurier* worked near Pointe aux Trembles (en haut) on the Longue Pointe traverse and curve. The material was sticky black sand mixed with clay and gravel, and very tough.

From September 24, until the end of the season, the work was at the channel between Sorel and Ile de Grâce, where the material was soft clay, the vessel going into winter quarters on November 26.

In 1904, the *Laurier* with a complete set of new buckets went into commission on April 28. Her first work was some cleaning up at Cap St. Michel, and Pointe aux Trembles (en haut), and on May 24 she was taken to Port St. Francis where she worked at Force Shoal, in hard clay, stones, and embedded boulders, until the end of the fiscal year.

The number of days during which this dredge was in operation was 180, including the bad weather periods, and the percentage of time at actual work, 57 per cent.

During the fiscal year the dredge removed 317,950 cubic yards at a total cost of \$35,883.24 or  $11\frac{28}{100}$  cents per yard.

*Lady Aberdeen*.—The hull of this dredge is of steel, the vessel complete, having been constructed at the Sorel works in 1900. The buckets were originally designed for working in soft material, and during the winter 1903-04, they were replaced by a complete new set of cast-steel buckets especially designed for working in rock or other hard material.

At the commencement of the fiscal year, this dredge was working at Contrecoeur, in soft clay, continuing until its completion on September 8. The dredge then worked on the channel between Sorel and Ile de Grace, also in soft clay, until the close of the season, November 26.

In 1904, after leaving winter quarters on May 3, the *Lady Aberdeen* worked for a few days on the Pointe aux Trembles channel, near Longue Point. After the completion of this work on May 24, the dredge was taken to Port St. Francis, where she continued working in the very hard material found at Iron Shoal, until the end of the fiscal year.

During the year, this dredge was at work for 176 days, with the machinery in actual operation for 68 per cent of the full working time.

The total number of cubic yards removed amounted to 649,400 at a cost of \$35,827.24 or  $5\frac{51}{100}$  cents per yard.

*Lady Minto*.—This dredge is of exactly the same type and design as the *Lady Aberdeen*. Until the close of the season of 1903, her buckets were for working in soft material. During the winter these were replaced by a complete new set of cast-steel buckets for working in rock and the hard material now found, below Lake St. Peter.

From the beginning of the fiscal year until September 3, this dredge worked at Contrecoeur, the material removed being soft clay and stones. From September 3, until November 7, the work was at Port St. Francis, on the difficult dredging of Force Shoal, where in addition to the hard character of the work, and the exposed position, a great deal of time was lost while large boulders were being lifted by a stone lifter.

## SESSIONAL PAPER No. 19

The remainder of the season, until the dredge went into winter quarters on November 24, was spent on the Pointe aux Trembles (en haut) channel.

On the opening of the season of 1904, this dredge was taken to St. Denis and River Saguenay where she was still working at the close of the fiscal year.

As the dredge only worked on the ship channel during the first half of the fiscal year, the working time amounted to 124 days, during which period the dredge was actually working 54 per cent of the full time.

The quantity dredged amounted to 306,340 cubic yards, and the cost amounted to \$37,002.17, or  $12\frac{97}{100}$  cents per yard.

*Lafontaine*.—This vessel is probably the best dredger of her type in the world. The hull is of wood, the work of the Sorel ship yard, and completed in 1901. With large but very strong buckets, she again holds the record of the elevator fleet, for the number of yards removed during the fiscal year, being again under the charge of Captain Albert Marcotte and engineer Johnny Matte.

From the commencement of the fiscal year until September 12, the *Lafontaine* worked at Contrecoeur in compact blue clay. She then worked at the foot of Lake St. Peter on Nicolet Traverse until October 28, and from that date until November 25, when she went into winter quarters, she worked at cleaning up some imperfect banks and lumps found by testing.

On the opening of the season of 1904, this dredge commenced operations on April 28, between Vercheres and Cap St. Michel, widening the channel during high water. On completing this work on May 19, she was taken back to the work at Nicolet Traverse continuing until the close of the fiscal year.

The working time of the *Lafontaine* was 178 days, the dredge being in actual operation 57 per cent of the full working time.

The total number of cubic yards removed amounted to 752,400, at a total cost of \$36,143.92, or  $4\frac{81}{100}$  cents per yard.

*Baldwin*.—This is the newest vessel of the elevator dredge fleet. The hull is of wood, constructed at the Sorel shipyard in 1902.

From the commencement of the fiscal year until November 4, the *Baldwin* worked at Pointe aux Trembles (en haut) in exceedingly tough and difficult material consisting of cemented black sand with embedded stones. Early in November the dredge was completely used up, and she was taken to Sorel for a thorough repair.

During the winter the buckets were rebuilt and strengthened, and the dredge was only ready for operations in 1904 on May 28.

Work commenced at Becancour, also, in very hard material consisting of hardpan and embedded boulders, and continued until the end of the fiscal year.

This dredge under the charge of Captain Louis Dauphinais, and engineer F. Beaulac worked very steadily for the time at work, and considering the character of the material. Owing to the heavy repairs in the spring and autumn, the year was short, the working time being only 136 days, during which period the dredge actually worked 75 per cent of the full time.

The total number of cubic yards dredged amounted to 320,880 at a cost of \$36,959.23, or  $11\frac{51}{100}$  cents per yard.

*J. Israel Tartc*.—This hydraulic dredge is the newest machine of the ship channel dredging fleet, and a new departure as regards plant for the improvement of navigation in Canada. Constructed by the Polson Iron Works Company, of Toronto, Canada, and designed under the supervision of the Chief Engineer and Superintendent of Dredging for the Public Works Department, by Mr. A. W. Robinson, M. E., of Montreal, the features and results of this dredge are of wide-spread interest.

The hull is of steel, of the same type and general design as the steel hulls of the elevator dredges.

The vessel is not self-propelling. She is moved and attended by tugs. The operations of dredging and methods of manoeuvring are precisely the same as those of the

4-5 EDWARD VII., A. 1905

elevator fleet. The vessel is held in position and moved for feeding by six anchors, one forward, one aft, and two on each side. The cut or furrow is taken, commencing at one side of the channel, and by the side winches hauling the dredge across to the other side, then advancing 2 to 6 feet according to the material, recrossing. Any ridges that may be left between cuts or furrows, are narrow. They cannot be found by the lead and in the soft material would not inconvenience a vessel in any way. The current also tends to level the dredged bottom.

The bow anchor is attached to a wire cable at least half a mile long, as in moving it, the dredge has to be stopped.

Work commences at midnight, Sunday, and if nothing happens continues until 6 o'clock p.m., on Saturday.

On account of the difficulty in making an absolute clean cut, at least two feet, usually more, is allowed, in order to assure safety from the ridges.

The quantities are calculated by taking winter soundings, and by obtaining the depth after dredging by the testing scow, and the advance from instrumental positions. The cubic quantities *in situ*, are increased 25 per cent to give results as scow measurement, on which basis all other work is calculated.

The material is discharged through a 36 inch pipe, floated on steel pontoons. This discharge pipe is connected by a swivel-elbow with the dredge, and the discharged end is moored to a steam scow held by two anchors. The curve of the pipe and the swing of the steam scow, allows for the motion of the dredge across the 450 foot channel. The discharge pipe is about 2,000 feet long, and the material is deposited as nearly as possible 1,500 feet from the edge of the channel, and on the side where the current will tend to carry the suspended matter further away.

Two tugs are generally required, one with a day crew, and the other for both day and night

The material in the bottom is first attacked by a revolving cutter on the end of the suction pipe. This cutter is driven by an independent engine. It not only cuts the material but starts it towards the inlet, and although the suction pipe is 80 feet long, heavy material, small stones, buoy anchors, &c., are sucked up with regularity.

The power for the main pump is derived from a triple expansion marine engine.

The boilers, of which four were originally put in, were of the locomotive type. From the commencement of the work, difficulty was had with the boilers. Finally in November, 1903, one of them exploded resulting in loss of life, and disabling the dredge for nearly eleven months. Four new marine boilers were put in, and have proved their efficiency and capacity.

Throughout the dredge, machinery and discharge connections, extensive alterations have to be made, and the vessel as she now stands is greatly changed from the plant which originally started work. It is now hoped that good steady work may be accomplished, and new records made.

During the month of September, 1903, dredge *J. Israel Tarte* easily made the world's record for one month's dredging. In 25 working days the dredge was in actual operation 83 per cent of the full working time of 132 hours per week, and removed 750,100 cubic yards scow measurement. These results were calculated from actual measured cross sections, and by adding to the quantity *in situ*, 25 per cent, to make scow measurement. This made over 30,000 cubic yards per working day or 1,650 yards per hour of actual work.

The dredge *J. Israel Tarte* was disabled on November 3, 1903, by a disastrous accident to one of her boilers.

The wages for the officers and crews of the dredge and attending plant, including board, amounts to about \$3,000 per month. This includes the salary of a mechanical engineer.

The cost of the steam coal (bituminous) delivered on board the dredge is about \$4 per ton of 2,000 lbs.

A dredge of the *Tarte* type gives extraordinary results if her machinery can be kept going. Except for breakdowns the delays are very few.



## SESSIONAL PAPER No. 19

The dredging machinery proper, the cutter, and the hydraulic machinery have proved themselves to be wonderfully well adapted both in design and construction for the work.

We have learned by experience that for hull, main engines, steam piping, and boilers, English practice of reserved strength and power, to avoid forcing to the utmost, is necessary to avoid breakdowns.

During the fiscal year the *J. Israel Tarte* worked only from July 1, to November 3, the dredge being disabled for the remainder of the working season. In the 106 days, the dredge was in actual operation for 69 per cent of the full working time.

The total number of cubic yards removed amounted to 2,055,140 at a cost of \$62,527.62, or an average of  $3\frac{4}{100}$  cents per yard.

*General Notes.*

The plant available consisted of six elevator dredges, one hydraulic dredge, six tugs, and two staff and sweeping steamers. There was also a stone lifter, three coal barges, and the necessary hopper scows, boarding scows, which scows and the testing scow.

The constant heavy work day and night is very hard on the machinery, and all the dredges were stopped from time to time, for shafts worn out, tumblers broken and especially for buckets broken.

The hopper scows also caused more delay and trouble than usual owing to wear and tear caused by the heavy material and heavy work.

The elevator dredges ordinarily work from 12 a.m. Monday until 6 p.m. Saturday, 20 hours per day, or 115 hours per week.

Two full crews work in ten hour shifts, changing at noon and at midnight. Day and night work is not as economical as day work only, especially in dredging, as coal-ing and repairs stop the work.

In making up the cost of the work of dredging everything is included, except interest on the capital expenditure and depreciation. The principal items of cost are, wages, fuel, board, stores, repairs, superintendence and engineering expenses. The item of repairs includes keeping the plant in constant good repair. The cost of operating an elevator dredge with its attendant plant amounts to about \$32,000 per annum. The cost of operating the hydraulic dredge will amount to about \$60,000 per annum.

The total cost of the dredging operations on the ship channel for the fiscal year was \$276,958.59, and the total number of cubic yards dredged 4,619,260, making the cost per yard  $5\frac{99}{100}$  cents.

By Order in Council of March 11, 1904, on a report from the Right Honourable the President of the Privy Council, with a view to systematizing and facilitating the work: the hydrographic surveys, the management and control of the river St. Lawrence ship channel together with the dredging and ship-building plant, were transferred at the close of the fiscal year to the Department of Marine and Fisheries, so as to place the supervision of the improvements to navigation on the St. Lawrence route under the department directly responsible for the Pilotage and Aids to Navigation.

The following tables show in a concise form the details of the operations of the different dredges, the classification of the expenditure, the cost per yard in each locality, and the expenditure at Sorel in connection with new plant and the shipyard generally.

## SOREL SHIP YARD.

The following are the chief items of work done at the Sorel Ship Yard during the fiscal year as reported by Mr. G. J. Desbarats, Director of Ship Yard.



4-5 EDWARD VII., A. 1905

*New Construction.*

The new construction underway during the year was as follows:—

*Dredge W. S. Fielding.*—The construction of this dredge was advanced during the year. The plating of the deck was finished; the inside partitions were placed, main engines, shafting and propeller were installed and the woodwork was begun.

The vessel was launched successfully on April 14 1904.

The pump engines for this dredge which were ordered by the department from the Polson Iron Works were not delivered during this year, so the engine installation could not be completed.

The hydraulic apparatus for operating the gates, was built and put in place.

*Dredge Progress.*—This spoon dredge which was begun in the previous year, was finished in the summer of 1903. Supplementary apparatus was added to fit this dredge for salt water work. After working during the summer of 1903, the dredge was brought to Sorel and some slight alterations were made to the machinery, and it is understood that she is now giving every satisfaction.

*Tug Montcalm.*—This is a twin screw wooden tug 82 feet by eleven feet six inches by nine feet. The hull which had been begun in the spring of 1903, was finished in this fiscal year. The boiler was built at Sorel and placed in the vessel. The old engines of the tug *John Pratt* were rebuilt and used for this tug. This tug was ready for operating in the spring of 1904, and has been working satisfactorily since.

*Dredge International.*—This dredge, which was bought by the department in the summer of 1903, was brought to Sorel the following winter and was overhauled and many changes made to the machinery and outfitting. The dredge was equipped with new spuds and a new arm for dredging in 60 feet of water, and the crane and the front part of the dredge was strengthened to enable her to do this work. The crew quarters were rebuilt and enlarged and all the machinery was overhauled and repaired.

*Scows for Dredge Progress.*—Two dump scows of a capacity of 200 cubic yards each were built for the use of the dredge *Progress*. These scows were built of Douglass fir and equipped with a new set of opening gear for the gates, which was designed at the Sorel ship yard. It is understood that these scows are giving every satisfaction.

*Stone Lifter No. 3.*—Machinery for this stone lifter was designed and built during this year. The hull was finished, the machinery placed and the boat was ready for work in the beginning of the summer of 1904.

*Coal Barge No. 4.*—A small amount of work was done on this barge in the previous year. The hull was completed in this fiscal year. The boat was equipped with boiler, steam winch and necessary outfit and was ready for operation in the spring of 1904.

*Dredge J. Israel Tarte.*—One of the boilers of this dredge having exploded in the fall of 1902, it was decided to equip it with four new boilers.

The upper works of the dredge had to be completely changed to accommodate these boilers. This work was carried out at Sorel during the winter.

The boilers were ordered from the Bertram Engine Works Company, Messrs. John Inglis & Son, of Toronto, and were to be delivered on May 1. They were only delivered in the latter part of the summer, so that the dredge was not ready for work in the spring of 1904. The machinery of the dredge was overhauled and put in good order.

*Hopper Scows.*—Two new hopper scows, of a capacity of 250 yards each, intended for use on the St. Lawrence ship channel, were begun in the spring of 1904. The timber for these scows was received, but very little work was done before June 30.

## SESSIONAL PAPER No. 19

*New Buckets.*—Two new sets of Rock buckets were supplied for the dredges *Lady Minto* and *Lady Aberdeen*. These dredges were equipped before with buckets for soft material. A complete outfit was provided, consisting of buckets, manganese pins and bushes and upper and lower tumblers. The necessary alterations were made to the dredges to install these buckets and tumblers.

The dredge *Laurier* was also equipped with a new set of buckets of a heavier pattern than those she had been using before.

*Dredge Laval.*—The hull of this dredge was rebuilt from the water line up on account of defects which had developed in the old timber. The hull was strengthened by the addition of steel girders. Additional quarters were provided for the crew and practically the whole of the upper works were rebuilt.

*Hoisting Winch.*—An electrical hoisting winch was installed in connection with the shear legs at the ship yard. This new winch enables us to lift a load of fifty tons.

*Maintenance of Fleet.*—The usual repairs were effected on the different vessels of the St. Lawrence ship channel, and the machinery was kept in good order during the working season. Repairs also were made to the dredges *Nithsdale* and *St. Louis* and a certain amount of work was done for the St. Maurice dredging fleet. The buildings in the ship yard were painted and the machinery was kept in proper repair during the year.



## SESSIONAL PAPER No. 19

'Lafontaine'	Contrecoeur—	13	250	150 $\frac{1}{2}$	287	86,100	30 0	450	Blue clay . . . . .	} Capt. A. Marcotte.
	Bellmouth Curve . . . . .	49	365	617 $\frac{1}{2}$	828 $\frac{1}{2}$	248,550	30 0	450	" " " " " "	
	Petit Traverse . . . . .	15	285	184 $\frac{1}{2}$	300	90,000	30 0	450	Blue clay and stones.	
	Contrecoeur Traverse . . . . .	4	80	47 $\frac{1}{2}$	33	9,900	30 0	450	" " " " " "	
	Lake St. Peter, Nicolet Traverse	74	1,420	656	649	194,700	30 0	350	Hard clay . . . . .	
	Vercheres to Contrecoeur . . . . .	4	75	43	27	8,100	30 0	450	Clay and stones . . . . .	
'Baldwin'	Vercheres to Cap St. Michel . . . . .	19	365	252	383 $\frac{1}{2}$	115,050	30 0	450		} Capt. L. Dauphinais
		178	3,410	1,951	2,508	752,400				
	Pointe aux Trembles (en haut) . . . . .	107	2,050	1,528 $\frac{1}{2}$	922	271,080	30 0	450	Clay and stones . . . . .	
	Becancour . . . . .	29	555	418 $\frac{1}{2}$	166	49,800	30 0	450	" " " " " "	
		136	2,605	1,947	1,088	320,880				
	Lake St. Peter . . . . .	106	2,328	1,598		2,055,140	30 0	450	Soft blue clay . . . . .	
'J. Israel Tarte'						4,619,260				L. A. Desy, M.E.

4-5 EDWARD VII., A. 1905

## DREDGING SHIP CHANNEL, River St. Lawrence between Montreal and

Vessels.	Fuel.	Wages.	Board.	Stores and materials.	Repairs. — Labour.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Dredge 'Lady Aberdeen'.....	4,729 00	6,913 17	2,251 60	1,160 81	3,516 20
Tug 'Cartier'.....	1,788 25	3,613 12	1,496 00	309 83	1,391 81
Dredge 'Lady Minto'.....	3,707 00	6,651 24	2,082 26	1,048 73	5,028 58
Tug 'St. Jean Iberville'.....	2,661 00	3,720 90	1,527 62	383 65	1,436 74
Dredge 'Laurier'.....	4,851 25	6,642 17	2,562 77	997 24	6,120 72
Tug 'St. Francis'.....	1,608 00	2,515 73	917 18	237 20	750 50
Dredge 'Laval'.....	4,696 25	5,971 65	2,136 27	986 27	3,973 01
Tug 'Jesse Hume'.....	1,580 00	2,805 28	948 42	266 86	863 71
Dredge 'Lafontaine'.....	5,310 25	6,574 28	2,649 74	1,276 70	5,281 63
Tug 'Emilia'.....	1,629 00	2,604 79	986 24	520 27	627 57
Dredge 'Baldwin'.....	4,267 00	5,842 58	1,909 61	618 54	8,400 13
Tug 'Champlain'.....	1,585 25	3,247 06	1,261 04	256 67	818 90
Dredge 'J. Israël Tarte'.....	16,071 60	10,209 97	2,617 95	1,826 48	3,709 74
Tug 'Lac St. Pierre'.....	3,255 25	3,683 89	1,549 49	745 28	997 71
" 'Montcalm'.....	474 00	815 54	261 82	118 55	56 22
Stone Lifter 'No. 2'.....	180 75	516 39	127 70	63 67	411 80
" 'No. 3'.....	45 50			64 14	3 60
Str. 'Frontenac'.....	3,133 53	4,222 93	2,203 25	1,631 71	1,549 62
" 'Eureka'.....	2,621 40	3,087 43	1,485 22	1,751 65	7,775 02
" 'Jas. Howden'.....	2,554 00	3,141 83	1,968 17	1,615 98	1,031 43
Tug 'Monitor'.....	393 00	193 00	146 60	405 80	1,843 22
" 'Carmelia'.....	62 52	28 00	6 00	229 84	479 10
Hydraulic Survey.....					
Str. 'De Levis'.....	1,596 50	2,968 96	350 75	1,066 10	768 94
Dredge 'Progress'.....	126 25		32 12	672 59	43 16
" 'No. 6'.....	110 00	3,069 31	35 08	143 21	1,274 05
Expenditure for Plant.....					
Shops, Stores on hand, &c.....					
Str. 'James Howden' (No. 8).....					
Tug 'Montcalm' (No. 9).....					
Stone Lifter 'No. 3'.....					
Coal Barge 'No. 4'.....					
New Scows Nos. 14 and 15.....					
New Buildings.....					
Ship Yard Railway.....					
New sets of buckets.....					
Dredge 'Laval' New Hull.....					
" 'J. I. Tarte' Boilers, &c.....					
Electric hoisting gear.....					
New tools and machinery.....					
Coal on hand.....					
Stores and materials.....					
<i>Resumé.</i>					
Cost of dredging.....					
Expenditure for plant.....					
Shops, Surveys, &c.....					
Totals.....	69,036 53	89,039 22	31,512 90	18,417 77	58,153 11

## SESSIONAL PAPER No. 19

Quebec, Classification of Disbursements for Fiscal Year ended June 30, 1904.

General Expenditure New Plant, Rebuilding, Ship Yard, &c.	Proportion of General and Office Expenses, &c.	Expenditure for Each Vessel.	Stone lifter Service. Elevator Dredges	Tug Service.	Inspect'n, Towing, Sweeping, &c.	Hydrographic Survey including Str. 'De Levis'.	Total Cost of Operations of each dredge and plant, during fiscal Year.	Total Expenditure on Ship Channel Appropriations.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
	1,682 00	20,252 78	256 92	9,379 01	5,938 53		35,827 24	
	780 00	9,379 01						
	1,677 00	20,194 81	256 92	10,611 91	5,938 53		37,002 17	
	882 00	10,611 91						
	1,917 00	23,091 15	256 95	6,596 61	5,938 53		35,883 24	
	548 00	6,596 61						
	1,606 00	19,369 45	256 92	7,050 27	5,938 53		32,615 17	
	586 00	7,050 27						
	1,912 00	23,004 60	256 92	6,943 87	5,938 53		36,143 92	
	576 00	6,943 87						
	1,908 00	22,945 86	256 92	7,817 92	5,938 53		36,959 23	
	649 00	7,817 92						
	3,174 08	37,609 82		13,040 75	11,877 05		62,527 62	
	927 00	11,158 62						
	156 00	1,882 13						
	117 00	1,417 31						
	11 00	124 24						
	1,155 00	13,896 04						
	1,515 00	18,235 72						
	934 00	11,245 41						
	271 00	3,252 62						
	73 00	878 44						
						28,692 49		
	612 00	7,363 25				7,363 25		
	79 00	953 12						
	421 00	5,052 65						
	588 12							
	9,373 84							
	9,140 94							
	14,641 35							
	16,587 78							
	176 94							
	1,220 22							
	60,470 90							
	20,350 38							
	50,518 66							
	4,981 86							
	6,281 26							
	15,996 41							
	56,375 27							
								276,958 59
								308,765 44
266,703 93	24,168 08	290,327 61	1,541 55	61,440 34	47,508 23	36,055 74	276,958 59	585,724 03

4-5 EDWARD VII., A. 1905

DREDGING SHIP CHANNEL, River St. Lawrence between Montreal

DETAILS OF DREDGING, LOCALITY

Dredges.	Total Cost of Operations of each dredge and plant, during Fiscal Year.	Number of days in Operation, each Dredge.	Cost per Day. Opera- tions of Dredge and plant.	Days Working each Locality.	Cost of Work each Locality.	Total Cost of Operations of each Dredge.
	\$ cts.		\$ cts.		\$ cts.	\$ cts.
Dredge 'Lady Aberdeen'.....	35,827 24	176	203 56	26	5,292 66	.....
" " ".....				32	6,514 04	.....
" " ".....				68	13,842 38	.....
" " ".....				18	3,664 18	.....
" " ".....				32	6,513 98	.....
						35,827 24
Dredge 'Lady Minto'.....	37,002 17	124	298 40	55	16,412 24	.....
" " ".....				55	16,412 24	.....
" " ".....				14	4,177 69	.....
						37,002 17
Dredge 'Laurier'.....	35,883 24	180	199 35	82	16,346 80	.....
" " ".....				54	10,764 97	.....
" " ".....				12	2,392 23	.....
" " ".....				32	6,379 24	.....
						35,883 24
Dredge 'Laval'.....	32,615 17	141	231 31	3	693 96	.....
" " ".....				118	27,294 94	.....
" " ".....				20	4,626 27	.....
						32,615 17
Dredge 'Lafontaine'.....	36,143 92	178	203 65	13	2,639 74	.....
" " ".....				49	9,949 72	.....
" " ".....				15	3,045 85	.....
" " ".....				4	812 24	.....
" " ".....				74	15,026 08	.....
" " ".....				4	812 23	.....
" " ".....				19	3,858 06	.....
						36,143 92
Dredge 'Baldwin'.....	36,959 23	136	271 75	107	29,078 21	.....
" " ".....				29	7,881 02	.....
						36,959 23
Dredge 'J. Israël Tarte'.....	62,527 62	106	589 88	106	62,527 62	.....
" " ".....					...	62,527 62
Totals.....	276,958 59	1,041	.....	1,041	276,958 59	276,958 59

## SESSIONAL PAPER No. 19

and Quebec, Classification of Disbursements, &c.—*Continued.*

## AND COST PER CUBIC YARD.

Number of Cubic Yards dredged each Locality.	Total Cubic yards for each Dredge.	Cost per Cubic yard. — Each Locality	Average Cost per Cubic Yard for each Dredge.	Kind of Material Dredged.	Locality of Dredging.
		Cts.			
126,600		4 <sup>18</sup> / <sub>100</sub>		Clay and stones	Contrecoeur, St. Ours Traverse.
169,200		3 <sup>84</sup> / <sub>100</sub>		Blue clay	" Bellmouth Curve
285,600		4 <sup>100</sup> / <sub>100</sub>		Soft clay and sand	Sorel to Ile de Grace.
18,000		20 <sup>50</sup> / <sub>100</sub>		Clay, sand and stones	Pte. aux Trembles (en haut).
50,000		13 <sup>05</sup> / <sub>100</sub>		Clay and stones	Port St. Francis.
	649,400		5 <sup>51</sup> / <sub>100</sub>		
241,050		6 <sup>80</sup> / <sub>100</sub>		Blue clay and stones	Contrecoeur Traverse.
53,650		0 <sup>00</sup> / <sub>100</sub>		Clay, sand and boulders	Port St. Francis.
11,640		35 <sup>80</sup> / <sub>100</sub>		Clay and stones	Pte. aux Trembles (en haut).
	306,340		12 <sup>07</sup> / <sub>100</sub>		
78,800		20 <sup>74</sup> / <sub>100</sub>		" "	" "
206,550		5 <sup>51</sup> / <sub>100</sub>		Soft clay and sand	Sorel to Ile de Grace.
6,400		37 <sup>50</sup> / <sub>100</sub>		Clay and stones	Verchères to Cap St. Michel.
26,200		24 <sup>34</sup> / <sub>100</sub>		" "	Port St. Francis.
	317,950		11 <sup>25</sup> / <sub>100</sub>		
3,150		22 <sup>00</sup> / <sub>100</sub>		Sand	Champlain.
184,750		14 <sup>70</sup> / <sub>100</sub>		Clay and stones	Pte. aux Trembles (en haut).
29,250		15 <sup>81</sup> / <sub>100</sub>		"	
	217,150		15 <sup>01</sup> / <sub>100</sub>		
86,100		3 <sup>06</sup> / <sub>100</sub>		Blue clay	Contrecoeur, Bellmouth Curve.
248,550		4 <sup>00</sup> / <sub>100</sub>		"	" Contrecoeur Course.
90,000		3 <sup>100</sup> / <sub>100</sub>		"	" Petite Traverse.
9,900		8 <sup>00</sup> / <sub>100</sub>		" and stones	" Contrecoeur Traverse.
194,700		7 <sup>20</sup> / <sub>100</sub>		"	Lake St. Peter, Nicolet Traverse.
8,100		10 <sup>22</sup> / <sub>100</sub>		Hard clay	Verchères to Contrecoeur.
115,050		3 <sup>55</sup> / <sub>100</sub>		Clay and stones	" Cap St. Michel.
	752,400		4 <sup>81</sup> / <sub>100</sub>		
271,080		10 <sup>73</sup> / <sub>100</sub>		" "	Pte. aux Trembles (en haut).
49,800		15 <sup>82</sup> / <sub>100</sub>		" "	Becancour.
	320,880		11 <sup>53</sup> / <sub>100</sub>		
2,055,140		3 <sup>04</sup> / <sub>100</sub>		Soft blue clay	Lake St. Peter.
	2,055,140		3 <sup>04</sup> / <sub>100</sub>		
4,619,260	4,619,260				



4-5 EDWARD VII., A. 1905

## DREDGING PLANT.

The following is a description of the dredging plant owned and operated by the Public Works Department in connection with the River St. Lawrence ship channel between Quebec and Montreal.

## DREDGES.

*The Elevator Dredge 'Laval' (wooden hull).*

Length over all—150 feet.  
Breadth of beam—30 feet.  
Depth of hold—14 feet.  
Average draught—11 feet.  
Greatest working depth—43'5 feet.  
Hull built in Ottawa in 1894.  
Steel buckets.  
Working capacity per day in hard material—1,000 to 2,000 cubic yards.

*The Elevator dredge 'Laurier' (wooden hull).*

Length over all—168 feet.  
Breadth of beam—32 feet.  
Depth of hold—14 feet.  
Average draught—11 feet.  
Greatest working depth—42'5 feet.  
Built at Sorel shipyard in 1897.  
¾ cub. yd. buckets for hard-pan.  
Working capacity per day in fairly stiff clay—2,000 to 3,000 cubic yards.

*The Elevator Dredge 'Lady Aberdeen' (steel hull).*

Length over all—148 feet.  
Breadth of beam—32 feet.  
Depth of hold—13 feet.  
Average draught—7'5 feet.  
Greatest working depth—42'5 feet.  
Built at Sorel shipyard in 1900.  
Steel buckets.  
Working capacity per day in soft material—4,000 to 5,000 cubic yards.

*The Elevator Dredge 'Lady Minto' (steel hull).*

Length over all—148 feet.  
Breadth of beam—32 feet.  
Depth of hold—13 feet.  
Average draught—7'5 feet.  
Greatest working depth—42'5 feet.  
Built at Sorel shipyard in 1900.  
Steel buckets.  
Working capacity per day in stiff clay and stones—2,000 to 4,000 cubic yards.

## SESSIONAL PAPER No. 19

*The Elevator Dredge 'Lafontaine' (wooden hull).*

Length over all—168 feet.  
Breadth of beam—32 feet.  
Depth of hold—14 feet.  
Average draught—9 feet.  
Greatest working depth—45 feet.  
Built at Sorel shipyard in 1901.  
1½ cubic yards buckets for soft material.  
Working capacity per day in soft material—5,000 to 6,000 cubic yards.

*The Elevator Dredge 'Baldwin' (wooden hull).*

Length over all—165 feet.  
Breadth of beam—34 feet.  
Depth of hold—14 feet.  
Average draught—8 feet.  
Greatest working depth—45 feet.  
Built at Sorel shipyard in 1902.  
1 cubic yard buckets strengthened for fairly hard material.  
Working capacity per day in medium material—2,500 to 3,500 cubic yards.

*The Hydraulic Dredge 'J. Israel Tarte' (steel hull).*

Length over all—160 feet.  
Breadth of beam—42 feet.  
Depth of hold—12½ feet.  
Average draught—6 feet.  
Length of suction frame—80 feet.  
Greatest working depth—50 feet.  
Built at the Polson Iron Works, Toronto, in 1902.  
Working capacity per day in soft material—12,000 to 20,000 cubic yards.

## TUGS.

*The Tug 'Frontenac' (composite hull).*

Length over all—113 feet.  
Breadth of beam—23 feet.  
Depth of hold—10 feet.  
Average draught—9 feet.  
Built at Sorel shipyard in 1901.

*The Tug 'Eureka' (steel hull).*

Length over all—100 feet.  
Breadth of beam—22 feet.  
Depth of hold—12 feet.  
Average draught—11 feet.  
Built in Glasgow, Scotland, in 1893.

*The Tug 'De Levis' (wooden hull)—Hydrographic surveys.*

Length over all—104 feet.  
Breadth of beam—20 feet.  
Depth of hold—10 feet.  
Average draught—9 feet.  
Built at Sorel shipyard in 1902.



PART V

REPORT ON GOVERNMENT TELEGRAPH LINES

FOR THE

FISCAL YEAR ENDED JUNE 30, 1904



## GOVERNMENT TELEGRAPH SERVICE.

DEPARTMENT OF PUBLIC WORKS,

OFFICE OF THE GENERAL SUPERINTENDENT,

OTTAWA, ONT., December 9, 1904.

F. GELINAS, Esq.,

Secretary, Department of Public Works.

SIR,—I beg to submit herewith my report on the Government Telegraph Service for the twelve months ended June 30, 1904.

This report, as usual, is prefaced by a list to the present date of the land lines and cables in operation ; with data of lengths, year of construction, number of offices at present established, and an estimate of the traffic handled in each instance.

The usual tabular statements, giving lists of the offices, operating staff, &c., in the several districts are appended to the report ; likewise the tariff sheets, showing the rates charged for messages on the several lines.

I have the honour to be, sir,

Your obedient servant,

D. H. KEELEY,  
*General Superintendent.*

4-5 EDWARD VII., A. 1905

## GOVERNMENT TELEGRAPH SERVICE.

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Offices.	Yearly Average of Messages Sent.
			Land Lines.	Cables.	*Total.		
			Miles.	Kt's.			
Newfoundland..	Port au Basque—Cape Ray .....	1883	14		14	2	
Nova Scotia .....	North Sydney—Meat Cove (with loops).	1880-02	167½				
" .....	Across Bras d'Or Channel .....	1880			168½	17	5,000
" .....	St. Ann's Harbour .....	1887					
" .....	Ingonish Harbour .....	1887					
" .....	Bras d'Or—Kempt Head .....	1904	20		20	3	
" .....	Meat Cove—St. Paul's Island .....	1890		2½	23	1	50
" .....	On St. Paul's Island .....	1890	3				
" .....	Mabou—Meat Cove .....	1887-00	109		109	9	2,500
" .....	Barrington—Cape Sable .....	1883	16				
" .....	Across Bear Point Channel .....	1883		1½	17½	Leased.	
" .....	Lt. House Channel .....	1883					
" .....	Mabou—Port Hawkesbury .....	1903	41½		73½		
" .....	Port Hawkesbury—St. Peters .....	1903	32				
" .....	St. Peters—Main à Dieu .....	1904	80½			15	1,500
" .....	Main à Dieu—Scatarie .....	1902		1½	125½		
" .....	On Scatarie Island .....	1904	7½				
" .....	Cabarous—North Sydney .....	1904	35½				
New Brunswick.	Chatham—Eseuminac .....	1885	42		42	6	600
" .....	<i>Bay of Fundy System:</i>						
" .....	Eastport—Campobello .....	1880		1½			
" .....	On mainland Eastport .....	1880		½			
" .....	On Campobello Island .....	1880		7½			
" .....	Campobello—Grand Manan .....	1880		7½	44½	10	2,500
" .....	On Grand Manan Island .....	1880	25½				
" .....	Grand Manan—Cheney's Island .....	1890		½			
" .....	On Cheney's Island .....	1890		¾			
" .....	Cheney's Island—Whitehead Island .....	1890		½			
" .....	Partridge Island—Fort Dufferin .....	1900		½			
Quebec .....	Bay St. Paul—Chicoutimi .....	1881-04	98		98	6	
" .....	St. Alexis—St. Catherine's Bay .....	1904	78		78	5	2,000
" .....	Murray Bay—St. Agnes .....	1904	14½		14½	2	
" .....	Bay St. Paul—Petite River .....	1904	13		13	1	
" .....	Chicoutimi—St. Charles .....	1903	37				
" .....	St. Anne—Lac Claire .....	1903	15		61	10	
" .....	St. Anne—St. Fulgence .....	1903	9				
" .....	<i>North Shore Line:</i>						
" .....	Murray Bay—Chateau Bay .....	1881-01	1,028½				15,000
" .....	Across Saguenay River .....	1883		1½			
" .....	Bersimis to Manicouagan .....	1883		12	1000	66	
" .....	Manicouagan to Godbout .....	1883		26			
" .....	Chateau Bay—Belle Isle .....	1901		22½			
" .....	<i>Quarantine System:</i>						
" .....	Quebec—L'Ange Gardien .....	1885	13				
" .....	L'Ange Gardien—Orleans Island .....	1885		¾			
" .....	On Orleans Island .....	1885	29½				
" .....	Orleans Island—Isle Reaux .....	1889		2	52½	8	2,300
" .....	On Isle Reaux .....	1889		2½			
" .....	Isle Reaux—Grosse Isle .....	1889		2			
" .....	On Grosse Isle (all told) .....	1885-94	3½				
" .....	St. Jean—St. Famille (loop) .....	1904	5½		5½	1	

## SESSIONAL PAPER No. 19

GOVERNMENT TELEGRAPH SERVICE—*Concluded.*

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Officers.	Yearly Average of Messages Sent.
			Land Lines.	Cables.	*Total.		
			Miles.	Kt's.			
<i>Anticosti System:</i>							
Quebec	Gaspé—L'Anse à Fougère	1881	28			9	1,500
"	L'Anse à Fougère—Anticosti	1881		44½			
"	On Anticosti Island	1881-90	223½		316½		
"	Anticosti—Long Point, Mingan	1890		21			
<i>Magdalen Island System:</i>							
"	Meat Cove, C.B.—Magdalen Islands	1880		55		12	2,000
"	On Magdalen Islands	1881-02	83½	½	243		
"	Grosse Isle—Bryon Island	1902		11			
"	Bryon Island—Anticosti	1902		93			
<i>Pelee Island System:</i>							
Ontario	Leamington—Point Pelee	1889	12			9	800
"	Leamington Dock—Pelee Island	1901		17	42½		
"	On Pelee Island	1889-00	13½				
North west.	Qu'Appelle—Edmonton	1883	625		625	18	9,500
"	Moosejaw—Wood Mountain	1885	90½		90½	3	300
"	Wood Mountain—Willow Bunch	1904	38		38	7	2,000
"	Edmonton—Indian Ag. & Stoney Plain	1904	19		19		
"	Edmonton—Arthabaska Ldg.	1904	98		98		
"	Duck Lake—Batoche	1902	9		12½		
"	Duck Lake—Indian Agency	1902	3½			3	200
"	Edmonton—St. Albert	1887	9				
"	St. Albert—Qui Barre and Alexandria	1902	27		36		
British Columbia	Ashcroft—Quesnelle (local wire)	1878-87	215		215	6	800
"	Victoria—Cape Beale	1891	118		118		
"	Nanaimo—Comox	1893	81		81		
"	Parksville—Alberni	1895	29½		86½	2	8,000
"	Alberni—Cape Beale	1899	57				
"	Alberni—Clayoquot	1902	96½		96½		
"	Kamloops—Lower Nicola	1899	67		67	9	1,400
"	Golden—Windermere	1901-02	92		92	5	1,500
"	Duncan Sta.—Salt Spring Isl. & Extens.	1902-04	33		33½	4	
Yukon.	Ashcroft—Dawson and Boundary	1899-01	1845			66	42,000
"	Hazleton—Port Simpson and Aberdeen	1901-02	202½				
"	Tagish—Cariboo Crossing	1901	18				
"	150 mile Sta.—Quesnelle Forks	1902	64		2,252½		
"	Ashcroft—Lillooet	1896	62				
"	Quesnelle—Barkerville	1887	61				
Total, end of 1904			6270	344½	6614½	327	102,100

\* For convenience in totalling, the knots of cable are regarded as statute miles.



4-5 EDWARD VII., A. 1905

## REPORT OF THE GOVERNMENT TELEGRAPH SERVICE FOR 1903-04.

## EXPLANATORY NOTES.

The tabular statement prefacing this report shows the total mileage, &c., of the telegraph lines operated by the government. Lines that have been subsidized or constructed and transferred by the government for operation by private companies are not included in this list.

The matter in the following pages comprises merely a statement of specific actions taken in the course of the year, and in any case where no particular reference is made to a line found mentioned in the list, the understanding intended to be conveyed is that that line has been satisfactorily operated throughout the year, without any change of conditions since last made mention of in the annual reports.

## NEWFOUNDLAND.

The line from *Port au Basque* to *Cape Ray* continued to be operated as heretofore, under an arrangement with the Anglo-American Telegraph Company.

## MARITIME PROVINCES.

**NEW LINES IN CAPE BRETON.**—As was mentioned in last year's report the sections between Mabou and Port Hawkesbury, and between Port Hawkesbury and St. Peters, were completed in May, 1903. As soon as practicable thereafter arrangements were made for the putting of these lines in operation and the following appointments went into effect, the office at Mabou continuing as previously, in connection with the line to Meat Cove, which is now worked through to Port Hawkesbury.

Port Hood, agent operator, D. J. McDonald, October 1, 1903.

Judique, agent operator, Miss A. McPherson, October 1, 1903.

Craignish, agent operator, J. D. Cameron, October 1, 1903.

Port Hastings, agent operator, Miss Maggie McFarlane, October 1, 1903.

Pt. Hawkesbury, agent operator, Miss E. McDonald, October 1, 1903.

River Bourgeois, agent operator, Angus Boyd, October 1, 1903.

St. Peters, agent operator, D. Morrison, November 1, 1903.

**Local Repair Sections.**—As was already the case on the North Sydney-Meat Cove and Meat Cove-Mabou lines, the further extension of the latter line to Port Hawkesbury has been provided for and the following new appointments are added to the list appearing in last year's report:—*Mabou-Judique* (20 miles) J. A. Campbell, Port Hood, local lineman at \$50 per year; and for *Judique-Port Hawkesbury* (22 miles) J. N. McIsaac, Craignish, \$50; the appointments dating from May 1, 1904.

**St. Peters-North Sydney and Scatarie.**—The construction of the lines from St. Peters to Main-à-Dieu, and on Scatarie island, and from Gabarus to North Sydney; was completed under contract by Messrs. Ahearn & Soper, of Ottawa in March, 1904. The specification followed was the same as for the other new sections in Cape Breton described in last year's report. The line from St. Peters to Main-à-Dieu covers a distance of 80½ miles with additional wire on loops of a half mile at Lower L'Ardoise and three miles at Gabarus. The length of line on Scatarie island is 7¼ miles and connection between this and the line on the main land is made by the cable laid for the purpose last year. The length of pole line between North Sydney and the Junction

## SESSIONAL PAPER No. 19

with the Main-à-Dieu line is 35½ miles and the wire is carried a further distance of three miles on the loop line to Gabarus. Several offices were opened on the St. Peters-Main-à-Dieu section in the course of construction by the teaching operator, Miss Bingham, who qualified the appointed agents in advance while the work of construction was progressing. The offices that have been established are the following :—

St. Peters, agent operator, D. Morrison, November 1, 1903.

Lower L'Ardoise, agent operator, M. Bremner, November 1, 1903.

Grand River, agent operator, Miss J. Finlayson, November 1, 1903.

Fourchu, agent operator, Miss May Hardy, November 1, 1903.

Gabarus, agent operator, Miss C. Grant, aJanuary 16, 1904.

Louisburg, agent operator, Wesley Townsend, February 1, 1904.

Main-à-Dieu, agent operator, Miss Maud Dixon, June 1, 1904.

Scatarie Island West, agent operator, E. E. Pope, August 15, 1904.

Scatarie Island East, agent operator, J. T. Martell, August 1, 1904.

North Sydney (branch from Gabarus, Western Union Telegraph connected), December 11, 1903.

*Scatarie Island Cable.*—In some rough weather in June (1904) this cable was damaged and communication ceased on the 24th of that month (Note.—The ss. 'Tyrian' on her way to the gulf shortly afterwards attended to the repair and restored the connection on July 23.)

*Southern Telephone Company.*—In consequence of the liability to interference in places by the wire of the new line with the wire of the telephone company that had been previously following the same route, an agreement was entered into whereby the government telegraph wire may be put on the telephone company's poles where needful for clearance and the company may put their wire on the telegraph poles wherever desired on the stretch between Louisburg and Gabarus.

*Circuit arrangements.*—Since these lines were completed, automatic repeaters have been placed at Gabarus, whereby North Sydney has direct communication with Scatarie, and at the same time via Gabarus and St. Peter's with Port Hawkesbury; and for convenience of the operation of the older sections, automatic repeaters have been placed at Meat Cove, whereby North Sydney has direct communication round that way also with Port Hawkesbury, the arrangement thus affording alternative routes, in event of local trouble, for the handling of business exchanged with the Western Union Telegraph system at the North Sydney office.

**NORTH SYDNEY—MEAT COVE SECTION.**—Pursuant to the arrangement made last year for the regular services of a general lineman for the Meat Cove-Port Hawkesbury section, as set forth in the last annual report, a similar appointment was decided upon for the Meat Cove-North Sydney section, and Mr. S. S. Burke, of Ingonish, joined the service in that capacity in April, 1904.

Nothing beyond ordinary repair work, performed by the regular staff, was called for during the year.

*Inverness Town.*—This is the name by which the former Broad Cove office is now known. As mentioned in last year's report, the location of this office was a three-mile loop changed from the old place to the settlement that has grown up about the mines. The operating arrangement of this office since the change was made October 20, 1903, has been a commission of 50 per cent of the government line tolls without a guarantee, instead of the former allowance of 25 per cent guaranteed at the rate of \$50 per year.

*Cape North (Inland).*—In May, 1904, an office was opened at this place, which is 5 miles from Aspy Bay and 4 miles from Dingwall, with Mr. John McDonald as

4-5 EDWARD VII., A. 1905

agent, the operating arrangement being a commission of 25 per cent of the government line tolls with the usual guarantee at the rate of \$50 per year.

*New Campbellton.*—Miss M. C. Campbell, former agent, having resigned the office on May 1, 1904. Mr. B. Dunlop was appointed to take charge of it, but afterwards requested another arrangement. (This office was put in charge of Mr. J. S. Birchall in July, with same guaranteed commission as before.)

*At Ingonish (North Bay).*—Owing to the decease of the former agent, Mr. J. M. Burke, who had the office since 1882, a new appointment was called for in May, 1904; and in June it was taken over by Mrs. S. S. Burke, with same operating arrangement as before.

*At South Gut.*—On the Baddeck loop line, an office is about to be opened (June, 1904) with Miss Rachael Morrison as agent-operator on commission of 25 per cent of government line tolls, with the usual guarantee at the rate of \$50 per year. There was an office at this place prior to December 31, 1899.

*At Baddeck.*—The office is to be transferred from Mr. Alex. Anderson, former agent-operator, to Mrs. Anderson, from July 1, 1904, and the operating arrangement provides for a commission of 25 per cent with a guarantee at the rate of \$100 per year, the business of the office being considered sufficient to warrant an exception to the usual rate of \$50, that was previously attached to this office.

*At Meat Cove.*—Where connection is made with the Magdalen islands and St. Paul's island cables, and where a set of automatic repeaters is now located as already mentioned (New lines, Circuit arrangements) a special arrangement was recently made (May, 1904) whereby Mr. A. B. McDonald, agent and circuit manager, was temporarily relieved by Miss M. J. McDonald, as acting agent-operator; with Mr. J. J. LeBourdais, of Grindstone, Magdalen islands, as assistant; and his services called into requisition in the capacity of electrician accompanying the ss, 'Tyrian' in the important work of cable repairs elsewhere made mention of in this report. The arrangement thus effected has proven in every way satisfactory.

*Local repair sections.*—Mr. D. McLeod, who had been attending to the North Sydney-Englishtown section, resigned from June 30, 1903, and was succeeded by Mr. D. Campbell; the allowance, previously \$60 per annum, was increased to \$100.

*Renewal of wire.*—At North Sydney, in consequence of the Meat Cove line (built in 1879) having within the town and immediate neighbourhood become badly deteriorated and weak, it was found advisable to renew that portion of it for a length of 1½ miles. This was done accordingly in January, 1904.

**MEAT COVE—MABOU SECTION.**—*At Cape St. Lawrence.*—As provided for last year, an office chiefly in the interest of the signal service, was established with C. Jamieson in charge, as agent-operator, his appointment dating from January 1, 1904.

*At Pleasant Bay* the office formerly in charge of Mrs. D. Smith was, upon her request, transferred to Miss M. J. McIntosh from October 15, 1903.

*Local repair sections.*—Mr. P. LaRede was appointed to look after the Grand Etang-Cheticamp section from May 20, 1903, instead of Mr. M. Lindce, as given in the list in last year's report; and Moses F. Aucoin was appointed June 1, 1904, for the Cheticamp-Barren section, formerly attended to by F. Aucoin, resigned.

Nothing beyond ordinary repair work, performed by the regular staff, was called for during the year.

**BOULARDARIE ISLAND.**—The supply of poles for and the construction of the line from Big Bras d'Or to Upper Kempt Head, twenty miles, was put in the hands of Mr.

## SESSIONAL PAPER No. 19

Donald McKenzie of Boulardarie Centre for performance by day labour and is nearing completion. The specification was the same as that followed in the case of the other recently built lines in Cape Breton.

*MAGDALEN ISLANDS.*—Pursuant to what was mentioned in last year's report, a further supply of 800 poles (cedar) was obtained at Gaspé for the completion of the reconstruction work that was proceeded with in the course of the season. An extension of the Point Basse loop line is to be made to South Beach as soon as the poles can be distributed in that section.

*At Grosse Isle.*—In consequence of the establishment of through connection between Cape Breton and Anticosti by way of the Bryon Island cables an assistant operator, Mr. J. Quinn was appointed from December 1, 1902.

*Cable Repairs.*—The cable between Meat Cove and Old Harry became interrupted on May 2, 1904. The ss. 'Tyrian' happened to be soon afterwards available however and a repair was effected on the 31st of the same month. The trouble proved to be a break  $24\frac{3}{4}$  miles off the Magdalen Islands, and the indications were that it had been caused by a vessels anchor.

*Bryon Island Cables.*—The cable between Grosse Isle and Bryon Island ceased working on September 12, 1903. Communication was restored by the ss. 'Tyrian' on October 3. It was found chafed through on rocky bottom off the Bryon Island landing. This same cable gave out again on January 1, 1904; the interruption was for a time thought to be due to some local trouble at Bryon Island but was finally located in the cable stretch. The connection was again restored by the ss. 'Tyrian' on June 3, 1904. This time the cable was found badly crushed at several spots near the Bryon Island landing and broken off short  $1\frac{1}{2}$  knots farther out.

The *Bryon-Anticosti section* became interrupted on December 2, 1903. It would have been impracticable to attempt a repair so late in the year and in the course of the present season this cable remained unattended to because of the services of the ss. 'Tyrian' being required elsewhere for more important stretches. Meanwhile however no inconvenience was experienced as Anticosti was reached by way of the cables from Gaspé and Long Point of Mingan. (Note.—This cable between Bryon and Anticosti was restored by the ss. 'Tyrian' on October 3, 1904. It was crushed by ice and broken off  $2\frac{1}{4}$  knots out from Bryon Island and also broken on the beach at the Heath Point end.)

*Anticosti Island.*—Under an appropriation provided for the purpose last year a sufficient quantity of No. 6 galvanized iron wire was procured for the renewal of the stretch of 184 miles between Beesie river and Fox Bay and in the course of the present season this and other requisite material is being delivered at several points in readiness for the work of stringing which will be proceeded with as early as practicable.

Some clearing, tree trimming, &c., and general repairs were done by the regular lineman with local assistance on the stretch between Mechastic Bay and South West Point and such other work was done along the line as was needful to keep it in working order.

*Cable Repairs.*—The cable between Heath Point and Bryon Island was interrupted from December 2, 1903, until October 3, 1904, as already related under the heading of Bryon Island cables. The stretches between South West Point and Gaspé and between Mechastic Bay and Long Point continued in good working order since the last named cable was repaired in August, 1903. This through communication between the North shore and Gaspé afforded an alternative route for the traffic which would otherwise have

4-5 EDWARD VII., A. 1905

been interfered with by the interruption of the cable between Godbout and Manicouagan, elsewhere dealt with, and the service was satisfactorily performed throughout the year.

*Indemnity for lost anchor.*—In consequence of the sacrifice of an anchor and hawser by the schooner 'Massachusetts' on May 15, 1903, at a spot about ten miles off South West Point where she was believed to have run foul of the Gaspé cable, and thereupon took the course indicated with a view to its preservation from damage, the department was called upon to make good the loss sustained, and payment was made accordingly upon the presentation of the usual documents establishing the value, &c., as is called for in such cases.

*ESCUMINAC LINE.*—Arrangements were in hand at the close of the fiscal year for the opening of an office at McDougall's or Loggieville, formerly called Black Brook, with Mrs. M. McDougall as agent operator.

*General Repairs.*—At the close of the fiscal year an arrangement was being made for a general overhauling of this line, the poles requiring to be straightened up and renewed in places.

*CHATHAM-TRACADIE.*—At the last session of parliament there was an appropriation of \$2,000 made for aid towards an extension of the Mirimichi Telephone Company's system from Chatham to Tracadie and at the close of the fiscal year this work was nearing completion. (Note.—This line, sixty miles in length, was completed in a satisfactory manner and put in operation in August, 1904. Under an agreement with the department, the company is to handle messages on government business free of charge).

*BAY OF FUNDY.*—The cable between Campobello and Grand Manan, which had been working well since the repair of July 25, 1903, noted in last years report, suddenly became interrupted on April 30, 1904. The ss. 'Tyrian' was sent to the locality as soon as practicable and restored the connection on June 17, 1904. In this instance the trouble was found to be a quarter of a mile off the landing at Long Eddy, the sheathing wires were corroded away and it is likely some small vessel's anchor ran foul of and parted the core.

*Deer Island.*—Under an appropriation that was made for the purpose last year, a local telephone company establishing a system on Deer Island were aided by the provision of two lengths of cable connecting with Eastport, Maine, and with Campobello Island; on an understanding that the company undertakes in the event of an interruption at any time, to themselves make repairs; or await the convenience of the department, which would be referable to the presence of the government cable ship in the vicinity on occasion. These cables were laid by the ss. 'Tyrian,' June 21-23, 1904; from Johnston's Cove near Eastport to Fair Haven, Deer Island, 2½ knots of cable; and from Chocolate Cove, Deer Island, to Pollock Cove, Campobello, two knots. Four terminal huts were also provided; two of them being put up by the ship's carpenter; and the others, for which material was left on the spot, subsequently dealt with locally.

*NORTH SHORE OF ST. LAWRENCE (West of Bersimis).*—The construction of new lines in the Chicoutimi district, in hand in the course of the summer of 1903, as mentioned in last year's report, was carried to completion with the exception of the line to Descente des Femmes which was only carried from St. Anne to St. Fulgence, nine miles. All of this work has been performed without contract by day labour under the immediate direction of M. J. C. Tache, resident engineer for the department at Roberval. The further length, about twenty-five miles, from St. Fulgence to Descente des Femmes has been provided for; and, as well, a loop off the main line at St. Alexis, to Ferland, a distance of four and a half miles. These extensions are being proceeded

## SESSIONAL PAPER No. 19

with this season. Offices were opened up on the new lines with appointments of agents as hereunder:—

*On branch from Chicoutimi to St. Charles, thirty-seven miles.*

St. Anne, agent and lineman, P. Gauthier, August 1, 1903.  
 Shipshaw, agent operator, Aug. Dufore, September 1, 1903.  
 Shipshaw North, agent operator, J. Murdock, September 1, 1903.  
 St. Léonard, agent operator, Geo. Gagnon, September 1, 1903.  
 St. Ambroise, agent operator, O. Grondin, September 1, 1903.  
 St. Charles, agent operator, B. Boucher, September 1, 1903.

*On branch from St. Anne to Lac Claire, fifteen miles.*

Range IX, agent operator, Thos. Simard, February 1, 1904.  
 Lac St. Charles, agent operator, J. Bouliane, January 1, 1904.  
 Lac Claire, agent operator, Albert Dufore, January 1, 1904.

*On branch from St. Anne to St. Fulgence, nine miles.*

St. Fulgence, agent operator, Rev. G. Gagnon, January 1, 1904.

*On branch from St. Alexis to St. Catharines bay, seventy-eight miles.*

St. Felix d'Otis, agent operator, Rev. H. Neron, November 1, 1903.  
 Petit Saguenay, agent operator, M. Tremblay, September 1, 1903.  
 Anse Cheval, agent operator, Price Bros., November 1, 1903.

The other two short lines that were mentioned as being in hand last year were constructed by day labour under the supervision of Mr. A. Boyer, and were in due course put in operation with appointments as hereunder.

*On branch from Murray Bay to Trinity, fourteen and one-half miles.*

St. Agnes, agent operator, Jas. Goudreault, January 1, 1904.  
 Trinity (Guay), agent operator, Jos. Guay, December 1, 1903.

*On branch from Bay St. Paul to Petit Rivière, thirteen miles.*

Petit Rivière, agent operator, J. Bouchard, December 1, 1903.

*Repair sections.*—Upon completion of the line spanning the gap between St. Etienne and Anse St. Jean, noted in last years report, it was found advisable to rearrange the repair sections of the North Shore system west of Bersimis, and the appointment of an additional lineman, J. Martel at Anse St. Jean, was made from May 1, 1904. The sections are now defined as hereunder:—

St. Anne-St. Charles, Ste. Anne-Lac Clair, Ste. Anne-St. Fulgence—Lineman, P. Gauthier, St. Anne.

Chicoutimi-St. Anne, Chicoutimi-St. Felix d'Otis, Chicoutimi-LaGalette—Lineman, J. Fortin, Chicoutimi.

Baie St. Paul-LaGalette, Baie St. Paul-Petit Rivière—Lineman, A. Gauthier, St. Urbain.

St. Felix d'Otis-Anse Cheval—Lineman, J. Martel, Anse St. Jean.

Murray Bay-Bay des Rochers, Murray Bay-Trinity (Guay)—Lineman, A. Brasard, Port au Persil.

Bay des Rochers-Bergeronnes, St. Catharines Bay-Anse Cheval, Tadousac-Sacre Cœur—Lineman, G. Bouliane, St. Catharines Bay.

Bergeronnes-Bersimis—Lineman, E. Courbron, Port Neuf.

*Roadway clearances.*—In consequence of an awkward growth of underbrush and trees obstructing the roadway skirted by the telegraph line between Port Neuf and Bersimis and elsewhere. provision is being made for a general clearance in the sections

4-5 EDWARD VII., A. 1905

where most called for, and it is intended to have this work taken in hand in the course of the ensuing year.

## OFFICE CHANGES, &amp;C.

*At Baie St. Paul.*—In connection with the operation of the new branch line to Petit Rivière a special allowance of \$25 per year for repeating of messages and \$12 per year for care of main battery is made to the agent Mr. F. Boivin.

*At Murray Bay* also in connection with the new branch line to St. Agnes and Guay a similar special allowance has been made.

*At Escoumains* arrangements were being made at the close of the fiscal year to open an accommodation office, apart from the regular one, at the mills of the Saguenay Lumber Company. Any commission, allowed on business handled, goes to the regular local agent.

*Second wire Murray Bay—St. Catharines Bay.*—In consequence of the congestion of traffic in this section a second wire was provided for and the work of putting it up was in hand at the close of the fiscal year, under the foremanship of the general line-man, Mr. A. Brassard in that section. This new wire in conjunction with the special one some time ago, provided by the Great North Western Telegraph Company, west of Murray Bay, affords a direct and unincumbered circuit for the north shore line extending down beyond the river Saguenay.

*North Sshore St. Lawrence (East of Bersimis)—Godbout section.*—The cable between Manicouagan and Godbout, 26 nautical miles, mentioned in last year's report as having been put in order on April 22, 1903, became interrupted again on December 1, 1903. Local examination indicated the trouble to be on the Manicouagan shoals, but the ice already formed was too heavy to admit of any attempt being made to get at it, and action had to be deferred.

In the month of April following, a further examination was made resulting in the conclusion that the trouble was in more than one place and some of it in deep water, rendering a repair impracticable until the cable ship would be available for the purpose. Meanwhile, however, with the exception noted below, there was no interruption of traffic, as the business with offices on the North shore below Manicouagan, was exchanged via the Long Point—Anticosti—Gaspé cable stretches in a satisfactory manner. (Note.—This service continued throughout the entire season until the Godbout-Manicouagan section of the Godbout-Bersimis landline that was in contemplation last year, was completed November 3, 1904, when direct communication between Quebec and the offices down the coast was re-established. There was a break in this service, however, of three weeks from July 16 till August 4, 1904, during an interruption of the Long Point-Anticosti cable, attended to by the ss. 'Tyrian.' In that interval, messages were handled by a boat service established between Manicouagan and Godbout for exchanges as frequently as were found needful.)

*Alternative landline connection.*—In pursuance of what was stated in last year's report an appropriation was obtained for the construction of a landline between Bersimis and Godbout, a distance of about 80 miles. A supply of cedar poles 20 feet long and 6 inches across the top corresponding to those elsewhere used along the coast was contracted for with Messrs. J. & N. Tremblay, of Chicoutimi, and deliveries were being completed at the close of the fiscal year. It was decided to answer every purpose best to have the work done by day labour with the foremanship of experienced hands instead of having it done under contract.

NOTE.—Arrangements were made accordingly, and as soon as the material was delivered, the work, with Mr. Aurelien Boyer as superintendent of construction, was taken in hand in three separate sections by gangs in charge of Messrs. N. A. Comeau, F. Gallienne, and Fidele Cormier. The work had so far progressed by November 3, when it was discontinued till next season, that connection was made that date at



## SESSIONAL PAPER No. 19

Scougall's Mills with the existing landline stretch of the cable route : thus affording through communication for the offices below with Quebec, as has been already noted above. The new line when carried on beyond Scougall's Mills, will go west and south to Bersimis, and the landline stretch at present on Manicouagan, between Point Outardes and Scougall's Mills may be operated as a branch from the latter place in event of discontinuance of use of the cables.

*Pathway clearances and general repairs, &c., below Manicouagan.*—In the autumn of 1903, some work was done in clearing trees and undergrowth and renewing bridges along the line between Little River and Moisie and between Moisie and Seven Islands; the general repairs to the line as were called for were made along the section between Point des Monts and Thunder river by the general repairer on that division with a gang locally engaged for the purpose. The other sections below were attended to by the local linemen and inspectors according to the arrangements made to this end as mentioned in the last annual report. In this connection, aid to the extent of \$50 each was agreed upon towards the special provision of buildings for the repair stations established at *Pigou, Betchouains, Musquaro, and Baie des Ha.*

For the use of Inspector P. C. Vignault, in his journeying along the coast in his section between St. Augustine and Chateau Bay, a small yacht was provided in August, 1903.

*New Offices and Office Changes.*

*At Point aux Anglais.*—The accommodation office was closed May 21, 1903, and re-opened again for the winter on October 26, 1903.

*At Pentecost,* where the district superintendent of the line below Bersimis is located, an appointment of an assistant operator, Mrs. E. H. Têtu, was made dating from May 1, 1904.

*At Clarke City* the accommodation office was closed November 6, 1903, and was reopened for the summer on April 17, 1904.

*At Moisie.*—The accommodation office in the premises of Messrs. Holliday Bros., apart from the regular office, and designated Moisie East, that was opened for the convenience of the firm in May, 1902, was closed on October 16 following, and re-opened June 1, 1903; closed September 16, 1903, and reopened again May 9, 1904.

*At Pigou.*—Half way between Moisie and Little River an office was opened on October 1, 1902, with Mrs. P. Wright as operator and Peter Wright as local lineman.

*At Watichou,* the former agent, Mr. Saltsman, withdrew, and the office was closed September 4, 1903. It was re-opened on December 1 following with Mrs. Clorinde Bourque as operator and John Bourque as local lineman. This office is in the premises of Mr. J. Beetz.

*At Rocky Bay,* the former agent, Mr. W. Kennedy retired, and the office was closed September 6, 1903; it was re-opened April 20, 1904, with Miss B. E. Chevelier as operator, and L. O. Chevelier, local lineman.

*At Chateau Bay.*—In consequence of the local agent having the Marconi station to attend to in addition to the landline and Belle Isle cable circuit, the services of a local lineman, John McCarthy, for the Chateau Bay-Green Bay section, a length of about 22 miles, were temporarily engaged from November 1, 1903. \*

*Automatic repeaters.*—Owing to the number of offices along the north shore and the very considerable distances covered by the line, it was found advisable to divide the circuit in sections and operate them through automatic repeaters. A set of the latter was installed at Bersimis two or three years ago, and facilitated the handling of business between Quebec and the offices below as far as Long Point, where the messages are repeated manually between the east and west; and a set was put in operation at Mutton Bay in January last (1904), whereby direct communication is had between Chateau Bay, the terminal station of the landline, and Long Point. At the latter office a



4-5 EDWARD VII., A. 1905

set of button repeaters is provided whereby the Anticosti cable circuit from Gaspé; can be put through to Quebec or to Chateau bay, as may be required on occasion. This arrangement proved very advantageous during the present year in the handling of the north shore traffic via Gaspé, in consequence of the interruption of the Godbout-Manicouagan cable as elsewhere mentioned.

*Belle Isle Cable.*—The cable between Chateau Bay and Belle Isle, which was put in working order on August 29, 1903, as mentioned in last year's report, became interrupted again on June 23, 1904, probably due to icebergs, as on the last occasion. Communication is maintained by means of the Marconi wireless stations, which have been regularly in operation under the conditions described in last year's report.

[Note.—The ss. 'Tyrian' proceeded to the straits to make a repair of this cable in October, 1904, but was obliged to leave it in consequence of the lateness of the season and continuous stormy weather, rendering operations impossible. The Marconi stations are counted upon to answer every purpose pending the restoration of the cable connection next season.]

*Isle aux Coudres Telephone System.*—The cable between the island and the mainland at Les Eboulements was damaged by ice and rendered unworkable on February 1, 1904, and could not be got at for repairs until May, when communication was restored. The repairing of this cable is undertaken by the department as an aid towards the operation of a local telephone system, and a payment to the extent of \$150 per year towards the maintenance of the line on Isle aux Coudres, is also made to the proprietor of the system, Mr. H. Lemieux, of Murray Bay.

*Grosse Isle Quarantine Line.*—On April 4, 1904, this line became defective below St. François; an examination was made at Isle Reaux as early as possible, and the trouble was found to be in the cable stretch between that place and St. François. Intermittent communication was had with Grosse Isle, and it improved after some handling of the cable at St. François shore, where finally the cable was found to have been crushed by ice. It was put in good order in the course of the summer and arrangements were made to have the shore length re-cemented in the rocks from which it had been dislodged.

*At St. Famille,* on a loop line from St. Jean, an office was opened on April 2, 1904, with Mr. P. O. Latourneau as agent-operator, on the usual allowance of 25 per cent of the government line tolls, guaranteed at the rate of \$50 per year.

This loop or 2-wire line, was for most part built by local labour under the direction of Mr. A. Boyer, early in the winter of 1903, and was completed by Mr. P. Pouliot, agent at St. Jean, in the following spring. It extends along a roadway across the island a distance of 5½ miles. Cedar poles 25 feet long, procured at St. Anne de Beaupré, No. 6 galvanized iron wire, and white porcelain insulators, were used in the construction.

#### ONTARIO.

*Pelee Island Line.*—In the absence of an available fund for the purpose of making the contemplated change in the track of the cable with a view to its betterment, there was some delay attending an attempt to restore communication after the break reported last year as having occurred on May 19, 1903. However, on the approach of winter it was thought well to make another attempt to put it in working order; and Mr. J. A. Parr, of the head office staff, proceeded to Leamington, and in conjunction with the district superintendent, Mr. J. McR. Selkirk, undertook the task with the aid of a steam tug early in November. They experienced a great deal of bad weather and after succeeding in getting the cable clear from both sides to within a space of a mile midway of the stretch (17 knots from Leamington dock to North Point, Pelee Island)

## SESSIONAL PAPER No. 19

they were obliged to stop the work because of the presence of ice and danger therefrom to the boat employed. Further action was thereupon (December 9) deferred till the present season. In June this year (1904), Mr. Selkirk resumed operations where the work had been left off and succeeded in restoring communication on the 16th. Provision is being made for the coming year whereby some action may possibly be decided upon with a view to a safer working condition of this cable; but it is very questionable whether there is any advantageous choice in the location of it, as the whole neighbourhood presents the liability of interference from vessels' anchors.

## NORTH WEST.

**CONSTRUCTION OF NEW LINES.**—Under appropriations that were made for the purpose last session there was a considerable amount of construction work in hand by day labour under the direction of the district superintendent, Mr. J. S. Macdonald, at the close of the fiscal year. Already, in anticipation of a vote for the purpose, a 2-wire branch forming a loop off the main line from a point between Pitt and Onion Lake was carried a distance of 22 miles to connect with the new settlement of Lloydminster. It was completed and put in operation on April 18, 1904, with Miss E. McCleneghan as agent-operator. In the construction of this line, native wood obtained from the nearest available sources along the route was used for poles and the other material consisted of No. 6 galvanized iron wire (a quantity of that size being on hand and available at the time) white porcelain insulators and oak brackets. A special building was put up for the accommodation of the office.

*Willow Bunch.*—For the extension to this place, 38 miles from Wood Mountain, mention of which was made in last year's report, a supply of tamarack poles 25 feet long, to admit of their being reset in course of time, were obtained at Prince Albert and hauled over the prairie from the railway at Moose Jaw.

**NOTE.**—The work of construction of this line was delayed for a time by wet weather, but it was completed and put in operation, with H. A. Noel, agent, October 19, this year (1904).

The wire used in this and all of the other lines mentioned hereunder was No. 8 galvanized iron with white porcelain insulators and oak brackets. A special building for the accommodation of the office is being arranged for.

*Edmonton to Athabasca Landing.*—(96 miles), a line was also in hand for this connection and followed an existing roadway. Poles were obtained along the route. No. 8 galvanized iron wire, &c., as above were used in the construction. [Note.—This line was finished and put in operation on October 1 (1904), with Jas. McKernan as agent-operator]. A special building for the office had to be provided.

*Edmonton-Indian Agency, Spruce Grove and Stony Plain.*—Provision was made last year for the construction of a telephone line between Edmonton and Edmonton Indian agency, a distance of 14 miles; the poles to be supplied along the route by the local residents. While this work was in hand the extension of it to Spruce Grove, 5 miles, and further to Stony Plain, 5 miles, in all, 24 miles, was decided upon. No. 8 galvanized iron wire, &c. as above, were used in the construction. [Note.—Telephone apparatus has been provided and this line will be in operation before the close of the present year (1904)].

*Andrew.*—Four and a half miles off the main line from Victoria, Alberta has been connected by a loop constructed under an appropriation provided for the purpose last year. Poles were obtained from nearest sources along the route and No. 8 galvanized iron wire, &c., were used in the work. An office was opened with Mr. A. K. Morrison as agent-operator on June 7, 1904.

*At Edmonton.*—The office (joint with C. P. Tel.) was removed September 1, 1903, from the premises formerly occupied to more convenient and commodious quarters in a new building erected by Messrs. D. R. Fraser & Co.

4-5 EDWARD VII., A. 1905

*At Pitt.*—An office was opened temporarily on May 1, 1904, in charge of Mr. W. A. McClenighan, of Onion Lake, in the interest of the Department of Immigration. (This office was again closed August 6, 1904.)

*At Clark's Crossing,* the point of departure from off the main line of a loop 14 miles to Saskatoon, an office was temporarily established for the accommodation of the Canadian Northern Railway for the month of July, 1903.

*At Humboldt* the office and repairs station discontinued in 1893, is to be re-opened, and arrangements are in hand for the erection of a building at that place for the purpose.

*Transfers of Agents and Linemen.*—Several changes were made in the location of members of the staff on the North-west lines in the course of the present year, and will be found noted in a tabular statement in the appendix to this report.

*Old Telephone Line, Lethbridge-Cardston.*—Provision was made last year for the reconstruction of the Spring Coulee-Cardston section (16 miles) of this line which was built, in all 57 miles, in 1894, and subsequently paralleled between Lethbridge and Spring Coulee. No action has been called for, however, as the local system of the Bell Telephone Company has lately covered the ground.

*Shifting of line to highway.*—As mentioned under the head of *Wood Mountain Line* in last years' report, action was being taken in the matter of shifting the telegraph line in places from its original location to the road allowances on highways of late provided. To this end material for an aggregate reconstruction of 7 miles was sent to Moose Jaw and to Qu'Appelle for the same purposes north of that point, an aggregate of 6 miles; the work to be done incidentally to general repairs, &c., as early as practicable after the roadways have been surveyed and definitely located.

In the course of construction of the Edmonton-Athabasca Landing line, which was carried on the north side of the river, parallel with the old line between Edmonton and Fort Saskatchewan, 24 miles, it was found expedient to discard the later stretch as it would soon need renewal, and to shift the wire to the new pole line on the north side. A second wire for this purpose was strung on the new pole line and the old wire on the south side was afterwards removed.

*Renewals of Poles.*—An examination of the lines throughout has been made in the course of the present season with the result that some renewals of the poles in places is found to be called for. Provision to this end will be made in the course of the coming winter so that the necessary work may be done next season.

*Banff Park Telephone System.*—An inspection of this system has been made by the District Superintendent, and with a view to improving the service and enhancing its usefulness some further extension and renewal of equipment next season has been provided for.

#### BRITISH COLUMBIA.

*ALBERNI-CLAYOQUOT LINE.*—There is nothing special to record as to the upkeep and operation of this line throughout the year.

*Repair Sections.*—As noted in the tabular statement appended to this report, *New Alberni* is but the post office address of the lineman, E. B. Girard. He is stationed at Uchuclesit midway between Franklin Creek and Pipestem inlet and looks after that section. The stretch between Alberni and Franklin Creek is kept in order incidentally with the Canadian Pacific telegraph wire strung on the same poles.

*At New Alberni or Alberni wharf.*—An office was opened on commission with Mr. A. E. Waterhouse as agent operator on October 1, 1903.

*At Clayoquot* a deed of two lots of land within the townsite was made by local residents to the Honourable the Minister of Public Works for the purpose of the tele-

## SESSIONAL PAPER No. 19

graph service and thereupon in November, 1903, a small building for the accommodation of the office was erected.

**ALBERNI-CAPE BEALE LINE.**—The section, with the line to Parkville from Alberni, is being maintained and operated in conjunction with the Canadian Pacific telegraph extension to Bamfield Creek, as mentioned in the annual report for 1901-1902.

**NANAIMO-COMOX LINE.**—The maintenance in satisfactory operation of this line has been conducted under the conditions mentioned in last years report. There has been no change in staff or otherwise called for in the interval.

**VICTORIA-CAPE BEALE LINE.**—Conditions of maintenance and operation have continued as mentioned in the last annual report. The only change to be noted is the appointment of E. C. Williams as agent operator and W. G. H. Ellison as lineman both at *Port Renfrew* in place of B. H. Kirkpatrick, former agent and repairer, resigned September 22, 1903.

*At Port Renfrew*, following upon the above mentioned withdrawal of Mr. B. H. Kirkpatrick, the building with lot formerly owned and occupied by him as an office and dwelling was purchased by the department.

*At Jordan River (Shirley).*—Percy Clarke was appointed agent lineman on December 1, 1903, in place of J. Goudie, resigned.

**KAMLOOPS-NICOLA TELEPHONE LINE.**—Under a special appropriation that was made for the purpose, there was a considerable amount of resetting of the poles in places along this line done in the course of the season of 1903; and for the readier attention to the removal of trouble liable to occur in consequence of the decaying condition of the poles generally, the District Superintendent, Mr. W. Henderson, made arrangements whereby at the cost only of time taken up on occasion by the work called for, the upkeep of the line was undertaken in sections by several of the subscribers at the established stations as hereunder:—

	Miles.
Kamloops-Anderson Creek, C. S. Stevens, Kamloops.....	12
Anderson Creek-Stump Lake, T. Bullman, Stump Lake.....	13
Stump Lake-Quelchena, E. O'Rourke, Quelchena....	20
Quelchena-Nicola Lake, A. E. House, Nicola Lake.....	9
Nicola Lake-Lower Nicola, G. Armstrong, Lower Nicola.....	13
Total....	67

The appointment of Mr. C. S. Stevens as general repairer for the whole line, and to have the local agency at Kamloops, was subsequently made and he took charge from June 1, 1904, connection being made with the Central Telephone office instead of with the Canadian Pacific telegraph office as formerly.

[NOTE.—As the result of a recent inspection made by Mr. J. G. Brown of the district superintendent's office (August, 1904) the need for an early renewal of the poles along the whole length of this line, which was built in 1899, has been ascertained; and provision to this end will be made in the estimates for the coming year.]

**GOLDEN-WINDERMERE LINE.**—Owing to some unsatisfactory experience in the operation of this line at times in the course of the year, some changes were decided upon in the disposition of staff and it is expected that as now provided for the requirement will be more advantageously served. The present arrangement is as hereunder:—

Golden (66 miles), telegraph, C. E. Wells, agent-operator.

Spillimacheen, telegraph, V. F. Dunn, agent and lineman; telephone, J. E. McKay, subscriber.

Windermere (16 miles), telephone, commission office.

4-5 EDWARD VII., A. 1905

Athelmer (5 miles, looped back on pole line), telephone, commission office.

Wilmer (5 miles), telegraph and telephone, R. A. Power, agent and lineman.

The dual service, telegraph and telephone is locally considered to best answer the purposes of the community.

*Salt Spring Island Telephone Line.*—This line, as mentioned in last year's report, extended from Duncan Station on Vancouver island, to Edwards' store, Salt Spring island; the further extension, 9 miles to Ganges Harbour, was provided for and carried out in March, 1904. An inspection of the whole line, now measuring 24 miles of land-line and  $\frac{3}{4}$ -mile cable, was recently made, and it was found in a satisfactory condition. A still further extension of 3 miles beyond Ganges Harbour to Vesuvius Bay, on the island, is being provided for.

[Note.—On July 23, 1904, an interruption occurred in the cable section across the Sanson narrows. On examination it was found to be wasted away by rust and abrasion for as much of its length as was overhauled, and a new length of  $1\frac{1}{4}$  miles, calculated to lay clear of rocks in the old track, is called for, and a sum therefor will be included in the estimates for the coming year.]

#### YUKON.

*(This division includes the Ashcroft-Quesnelle line and branches.)*

Throughout the year no other line work has been called for beyond what was attended to by the regular staff.

Such staff changes, &c., as have been made since the list of offices accompanying the last annual report was compiled, are noted in the revised list, or tabular statement, in the appendix hereto.

*Branch Line Repairs.*—The branch lines from Quesnelle to Barkerville, 61 miles; and Ashcroft to Lillooet, 62 miles; having been found to need some general overhauling and resetting of poles, provision is being made for the performance of that work before the close of the present year (1904).

#### *Establishment of New Offices.*

*At Cache Creek*, 4 miles from Ashcroft, an office was opened December 22, 1903, to be operated on commission.

*At Lafontaine*, 45 miles from Quesnelle, on the Barkerville branch, an accommodation office was opened on February 17, 1904, for the convenience of the Caribou Consol Company, and several other mining camps in the neighbourhood.

*At Lorne Creek*, 22 miles from the Skeena canyon, on the Port Simpson branch, an office was opened on April 30, 1904, with A. J. West as agent-operator.

*Decease of Members of Staff.*—Advices reached the department of the decease of Mr. F. B. Gorrell, who occupied the position of agent-operator at Pike river, near Atlin, in February, 1904; and of the sad loss by accidental drowning of Mr. W. S. Lanktree, agent-operator at Yukon Crossing, between Five Fingers and Fort Selkirk, on June 9, 1904.

*Alaskan Connections.*—On August 24, 1903, communication was established by the United States military telegraph between St. Michael and Boundary, the terminal station of the Yukon line, whence a connection had already been in operation to Valdes.

*The following notes in connection with the Yukon line were intended to be included in the body of the report submitted last year (1902-03):—*

*Maintenance Expenditure.*—In addition to the salaries given in the list of staff, there is made at all points beyond Quesnelle an allowance of provisions to each person

SESSIONAL PAPER No. 19

to the value of \$30 and upwards per month; or a cash equivalent, according to the remoteness of the stations from basis of supplies.

A reasonable explanation of this very considerable outlay is found in the circumstance that these arrangements for staff, although costly, are, so far as can be made out at present, only such as are calculated to afford a satisfactory service, and as a result although the line is a very long one, upwards all told of two thousand miles, a great part of it through a woody wilderness and consequently liable to constantly recurring interruptions, the business handled suffers no appreciable delay in transmission, the operators employed being sufficiently expert to keep it moving, as communication in times of line trouble happens to become re-established from point to point of the system.

As time goes on the liability of the line to interruptions should lessen, owing to its weaknesses being found and eliminated, and it ought soon to be practicable to reduce the number of linemen required to keep it in repair, in which case the maintenance outlay would be a good deal less than it is at present.

*Traffic receipts.*—For all that a reduction to two-thirds of the original through rates for messages, was made from June 1, 1902, the returns show an appreciable increase in the traffic and actual revenue as follows :—

	12 months	Messages sent.	Revenue.*
July-June 1901-02.. . . . .		33,136	\$105,591 69
“ 1902-03.. . . . .		41,447	113,721 44

*Supplementary Report.*—An interesting report, with a very satisfactory showing, from the acting superintendent of the Yukon system, Mr. J. Y. Rochester, at Vancouver, will be found elsewhere in the following pages.

---

\* These are the actual figures for the period covered ; the amounts set down in the tabular statements of Revenue and expenditure elsewhere in these annual reports, comprehend only what was brought to account to the end of the fiscal year in each instance, without regard to whatever balances of the traffic receipts may have been left over for subsequent entries.

4-5 EDWARD VII., A. 1905

## REVENUE AND EXPENDITURE.

The revenue and expenditure for each of the lines in the several districts herein-before mentioned are given in the following table :—

1903-04.	Expenditure.	Revenue.	Remarks.
	8 cts.	8 cts.	
Lower St. Lawrence and Maritime Provinces :—			
Anticosti lines .....	7,930 09	1,690 78	
Bay of Fundy .....	1,676 15	675 25	
Cape Ray .....	250 00		
Escommac .....	411 92	161 34	
Magdalen Islands .....	3,111 48	831 91	
Cape Breton lines .....	6,972 23	1,802 34	
North Shore (E.B.) .....	17,341 83	3,579 08	
" (W.B.) .....	5,680 08	1,885 59	
Quarantine system .....	2,157 59	464 48	
Isle Coudres line .....	150 00		
Belle Isle-Chateau Bay :—			
Marconi system .....	188 71		
Cable ship <i>Tyrian</i> :—			
Maintenance and renewal of plant .....	23,348 63		
Subsidies, stationery, line and office material and contingencies	14,125 68		
Total for Lower St. Lawrence, &c. ....	83,444 39	11,090 77	
Ontario :—			
Pelee Island line .....	2,301 52	35 20	
North-west Territories lines .....	19,938 62	4,916 94	
British Columbia—			
Alberni-Cape Beale .....	483 00	13 56	
Alberni-Clayoquot .....	3,888 42	265 73	
Golden-Windermere .....	3,622 75	589 10	
Kamloops-Nicola .....	1,364 32	672 70	
Nanaimo-Comox (including Alberni line) .....	3,725 23	2,452 33	
Vancouver-Salt Spring .....	264 62	29 08	
Victoria-Cape Beale .....	5,604 53	334 56	
B. C. service generally .....	749 07		
Yukon :—			
Ashcroft-Dawson .....	199,226 14	126,991 97	
Telegraph service generally .....	3,305 04		
Total .....	327,917 65	147,891 94	

Signal Service messages, Meteorological Service messages, reports and Fisheries bulletins are handled free of tolls.

\*Of this \$2,388.41 was for renewals.

+ " 83,619.87 " roadways, &c.

+ " 82,119.25 " cable repairs.

+ " 8752.62 " pole re-setting, &c.

## TELEGRAPH SERVICE GENERALLY.

*Cable Ship*—The s.s. *Tyrian* in command of Captain T. O'Leary with Mr. R. G. Zwicker, chief engineer ; Mr. W. McConnell, pilot ; and the other officers and members of the crew for most part the same as last year, was got in readiness early in the season starting out from Halifax on March 26, (1904), under an engagement with the Direct U.S. Cable Company in the same way as in the month of December previous, as noted in last year's report, for the repair of a break in their cable off Shelburne, N.S.; and after a successful outing returned to port on May 4. She left again on the 18th of that month for the repair of the Magdalen Islands cable, being joined by Mr. A. B. Macdonald at Meat Cove who accompanied her in the capacity of electrician upon that occasion and subsequently throughout the season in connection with the



## SESSIONAL PAPER No. 19

other repairs of which mention is made elsewhere in this report. The operations of the ship were expeditious and attended with great success and satisfaction.

*Telegraph Systems of the Dominion*—As a matter of general interest the latest figures to hand showing the extent of telegraph lines in operation in the Dominion are given hereunder :—

Canada.	LENGTH OF LINES IN MILES.			LENGTHS OF CONDUCTORS IN MILES.			Number of offices.
	Aerial.	Under-ground.	Total.	Aerial.	Under-ground.	Total.	
Great North Western Telegraph Co. ....	18,286	.....	18,286	35,721	.....	35,721	1,455
Canadian Pacific Telegraphs ..	19,916	2	19,918	45,886	57	45,943	1,152
Western Union Telegraph Co. . .	2,756	28	2,784	13,025	44	13,069	221
Government Telegraph Service.	6,270	.....	6,270	6,270	.....	6,270	327

## DEPARTMENTAL TELEPHONE SERVICE.

At the end of June, 1904, the telephone connections with the central office of the Bell Telephone Company at Ottawa, listed as chargeable to the special appropriation, numbered 240 the annual charge for which amounts to \$9,396.50. The connections are distributed amongst the several departments as hereunder :—

Department.	Offices.	Residences.	Annual charge.
			8 cts.
Agriculture.....	6	3	360 00
Auditor General .....	2	1	115 00
Census Branch .....	2	2	163 00
Customs.....	5	2	275 00
Dominion Police.....	6	2	313 00
Exchequer Court.....	1	1	85 00
Finance .....	3	2	203 00
Governor General .....	4	3	308 00
Houses of Commons.....	13	3	607 50
Indian Affairs.....	2	1	110 00
Inland Revenue.....	4	5	380 00
Interior (including line to observatory) .....	23	3	980 00
Geological Survey.....	2	1	110 00
Justice .....	5	10	570 00
Labour Department.....	1	..	50 00
Mounted Police.....	3	1	145 00
Marine and Fisheries.....	8	5	483 00
Militia and Defence.....	11	8	734 00
Parliamentary Library.....	1	2	120 00
Privy Council .....	3	5	325 00
Post office Department.....	6	4	380 00
Public Works.....	26	13	1,640 00
Printing and Stationery.....	3	2	175 00
Railways and Canals.....	3	4	265 00
Secretary of State.....	3	2	180 00
Senate.....	3	1	140 00
Trade and Commerce .....	2	3	180 00
	151	89	9,396 50



4-5 EDWARD VII., A. 1905

## APPENDED TABLES.

The usual tabular statements of the lines and offices, staff, &c., of the telegraph service, following hereupon, will be found to contain whatever additions or changes have been made up to June 30, 1904.

D. H. KEELEY,  
*General Superintendent.*

OTTAWA, December 9, 1904.

## DOMINION TELEGRAPH SERVICE.

## NEWFOUNDLAND TELEGRAPH SERVICE.

No.	Stations.	Inter- mediate Distance.	Agent and Operator.	Remarks.
		Miles.	\$ cts.	
1.	Port au Basque . . . . .	0	50 00 on commission	N.B. The commission is 25 per cent upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2.	Cape Ray Lighthouse . . . . .	14	50 00 " "	
	Totals . . . . .	14	100 00	

N.B.—The above short line is constructed in connection with the Signal Service, and connects at Port au Basque with the land line system of the Anglo-American Telegraph Company.

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## ANTICOSTI TELEGRAPH SYSTEM.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Fox Bay .....	0	Geo. Cabot .....	300 00	May 13, 1900 .....	Increased from \$290 since December 1902.
2	Heath Point .....	23	A. Tremblay .....	50 00 or commission.	Aug. 1, 1900 .....	For local agency.
3	South Point Lighthouse .....	32½	E. Leprise .....	50 00 "	Nov. 1, 1902 .....	For cable repeating station.
4	Shallop Creek .....	17½	B. Bradley .....	50 00 "	July 1, 1903 .....	
5	Salt Lake .....	52½	A. Allard, agt-repairer .....	360 00 "	July 7, 1881 .....	
6	South-west Pt. Lighthouse .....	15	A. Z. Lemieux .....	420 00 "	June 1, 1903 .....	Plus \$1 per day when on duty as general repairer.
	Jupiter River .....	7		50 00 "	" 1, 1901 .....	Increase from \$300 since May 1903.
	Roosie River .....	17½		50 00 "		
	Cape Eagle (Ellis Bay) .....	22		50 00 "		
	West Point Lighthouse .....	10	A. Malouin, dist. sup <sup>r</sup> .....	344 00 per annum	Aug. 1, 1900 .....	
7	English Bay .....	9	" operator .....	50 00 "	" 10, 1881 .....	
8	Mechastic Bay (cable land- ing) .....	3	F. Cabot .....	120 00 and commission	July 1, 1882 .....	
	Totals .....	14½				
		223½		2,334 00		

South-west Point connects with l'Anse à Fongère, Gaspé, by cable 44½ knots; and from Mechastic Bay connection is made with Long Point of Mingan by cable 21 knots.

0	L'Anse à Fongère .....		Thos. Dupuis .....	17 00		Special allowance for the cable terminus. A testing station only.*
1	Gaspé Basin .....	28	J. J. Annett .....	540 00	Oct. 16, 1881 .....	Transfer office. Connection with G.N.W. telegraph system. The salary was \$120 per year previous to December 1, 1903.
		28		557 00		

\*This payment was made to Mr. N. Bernier prior to October, 1903.

## SESSIONAL PAPER No. 19

## MAGDALEN ISLANDS SYSTEM.

## MAGDALEN ISLANDS SECTION.

1	Amherst .....	0	Miss J. Shea .....	50 00 or commission.	Oct. 1, 1882 .....	The commission is 25 per cent on all business, to and from the office in each instance; said commission guaranteed to be not less than at the rate of \$50 per annum.
2	Amherst Lighthouse .....	9	Wm. Cormier .....	50 00	June 11, 1881 .....	Plus \$1 per day when absent on duty.
3	Etang du Nord village .....	15	E.G. Buet, gen. repairer .....	400 00	Dec. 1, 1900 .....	
4	Etang du Nord Lighthouse .....	1	Mrs. A. Binet .....	50 00	" 1, 1881 .....	
5	Grindstone Island .....	5	N. Arsenault .....	50 00	Sept. 1, 1891 .....	Two-wire loop line.
6	Grindstone West .....		W. Leslie .....	Commission 25 p.c.	May 20, 1897 .....	
7	House Harbour (3 knots cable) .....		A. Lebourdais, chf. supt. .....	720 00	Aug. 17, 1890 .....	Plus \$1 per day when absent on duty. The salary was \$600 per annum prior to May 1, 1901.
			Mrs. Lebourdais, oper. .....	50 00	Sept. 15, 1893 .....	
8	Wolfe Island .....	3	Camille Delaney .....	50 00 or commission	June 1, 1903 .....	
9	Grosse Isle .....	28½	N. Clark .....	300 00 or commission.	June 1, 1888 .....	
10	Grand Entry .....	11	J. Quinn .....	50 00	Dec. 1, 1902 .....	For repeating station. Prior to Dec. 1, '02 the allowance was \$200 and commission for local agency.
		11	Mrs. F. Atkins .....	50 00	Feb. 18, 1882 .....	
		83½		1,880 00		
11	Point Bass—2 Wire loop from House Harbour .....	4	H. Arsenault .....	50 00 or commission.	Aug. 1, 1902 .....	
12	Bryon Island .....	1	W. Dingwell .....	150 00	Jan. 1, 1903 .....	Two-wire loop line from terminal hut for Grosse Isle and Anticosti cables.

Grosse Isle connects at Old Harry with Meat Cove, C.B., by cable 35 knots; and connects with Bryon Island by cable 11 knots; thence to Heath Point Anticosti 93 knots.

4-5 EDWARD VII., A. 1905

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## CAPE BRETON SECTION.

No.	Stations.	Inter- mediate Distance	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Notes.
		Miles.		\$ cts.		
1	Meat Cove (cable station).		A. E. McDonald, Circuit Manager.	720 00	Nov. 7, 1880	The commission is 25 p.c. on all business to and from the office in each instance; said commission guaran- teed to be not less than at the rate of \$50 per annum.
2	Aspy Bay	10 $\frac{1}{2}$	I. V. Nichols	50 00 or commission	July 1, 1894.	The loop line formerly running to White Point has been withdrawn
3	Dingwall (loop line).	3 $\frac{1}{2}$	Murdoch McDonald	50 00 "	Aug. 31, 1898.	
4	Cape North (Inland).	3	John McDonald	50 00 "	May 13, 1904.	
5	Neil's Harbour (half-way house loop line).	11	M. McLeod	50 00 "	April 1, 1887.	
6	Ingonish North Bay.	9	Mrs. S. S. Burke.	50 00 "	June 1, 1884.	Former Agent J. M. Burke deceased.
7	South Ingonish.	10 $\frac{1}{2}$	Geo. Brewer.	50 00 "	May 7, 1899.	
8	Ingonish Ferry.	2	G. H. Hackett	50 00 "	June 29, 1903.	
9	French River 4 knot cable.	21	John McDonald	50 00 "	April 1, 1899.	
10	Indian Brook.	5	Annie McDonald	50 00 "	Aug. 1, 1901.	
11	Murray (loop line).	14	R. B. Matheson	25 p.c. R & Cts.	Jan. 20, 1902.	25 per cent commission only.
12	Englishtown 4 knot cable.	10	W. Bingham	120 00 and commiss.	July 19, 1882.	Switching point for Baddeck line.
13	South Gut, St. Ann's (on loop).	5	L. M. Anderson	50 00 "	Closed December 31, 1899.	
14	Baddeck (on loop)	13		100 00 "	Salary. — \$120 per year previous to this appointment. Former Agent Mr. L. M. Anderson.	This loop to Baddeck starts from and returns to Englishtown.
15	Englishtown (back on loop)	18			June 17, 1904.	
16	Kelley's Cove, N. Camp- belton.	6	J. S. Burchell	50 00 or commission	July 7, 1904.	
17	Big Bras d'Or 4 knot cable.	21	Mrs. E. Livingston	50 00 "	Jan. 1, 1880.	
18	North Sydney	12 $\frac{1}{2}$	W. U. Tel. Co	Commiss n only		
<i>Repairs' Sections.</i>						
	Meat Cove—Sugar Loaf.		M. McAskill	80 00	April 1, 1898.	The commission is 50 p.c. on local business and 25 p.c. on through messages; and covers supervision of line and office accommodation at North Sydney.
	Sugar Loaf—Ingonish.		Charles Smith	100 00	" 1, 1898.	Increased from \$80 since June 1, 1903.
	Ingonish—Englishtown.		R. A. McDonald	80 00	" 1, 1898.	
	Englishtown—Baddeck.				" 1, 1898.	This section attended to on occasion by locally emp- loyed labour since July 1, 1902.
	Englishtown—N. Sydney.		Pan Campbell	100 00	July 14, 1903.	Payment includes horselire.
	Murray—Indian Brook		John Smith.	25 00	June 17, 1902.	
	Ingonish		S. S. Burke, gen. rept.	420 00	April 1, 1904.	
	Totals	168 $\frac{1}{2}$		2,345 00		

Meat Cove station connects with the Magdalen Islands system by a cable to Old Harry Head, 55 knots, and with St. Paul's Island by a cable of 20 knots. The latter is operated with telephones.

## SESSIONAL PAPER No. 19

## MABOU-CHETICAMP AND MEAT COVE, C.B., TELEGRAPH SYSTEM.

1	St. Paul's Island	3	S. C. Campbell.	50 00	Oct. 1, 1890. Land wire across the island, Atlantic Cove to Trinity Cove.
1	Mabou Town (Broad Cove)	0	Mrs. M. McDonald.	120 00 per annum	April 1, 1887. The commission is 25 p.c. of the Government line tolls, and is guaranteed to amount to not less than \$50 per annum. Where 50 p.c. commission is paid there is no guarantee as to amount.
2	Inverness	20	Miss Annie McLellan	50 p.c. Cks & Rts	Mar. 1, 1892.
3	South-west Margaree	12	J. D. McFarlane.	50 00 per annum	Feb. 1, 1898.
4	Margaree Harbour.	5	H. K. McLean.	50 p.c. R. & Cks	Oct. 20, 1896.
5	North-east Margaree (loop line wire).	10	Mrs. J. D. Ross.	50 00 or commission	Feb. 1, 1898.
6	Grand Etang.	8	G. Doudet.	50 00	" Sept. 13, 1902. This office re-opened after having been closed since January 1899.
7	Cheticamp.	8	Mrs. M. Fiset.	100 00	" 1, 1887. At South-west Margaree the commission was 50 p.c. till Sept. 1, 1899.
8	Pleasant Bay	27	Mrs. D. Smith.	50 00	" April 14, 1900.
9	Cape St. Lawrence	15	C. Jamieson.	50 00	" Jan. 1, 1904.
	Meat Cove.	1	Sec. Meat Cove Line. (D. C. Dawson, D. Supl.)	150 00	" Jan. 1, 1887.
	<i>Repairer's Sections</i>				
	Mabou—Strathlorne		L. G. McDougall	40 00 per annum	Nov. 3, 1902.
	Strathlorne—S. W. Margaree		J. D. McFarlane.	40 00	" June 4, 1902.
	S. W. Margaree—Margaree Harbour		Alex. McFarlane, st.	10 00	" 4, 1902.
	Margaree Harbour—Grand Etang		H. K. McLean	25 00	" 1, 1903.
	Grand Etang—Cheticamp.		Philip La Rade.	25 00	" May 20, 1903.
	Cheticamp—Barren.		R. Angus	40 00	" 20, 1903.
	Barren—Pleasant Bay.		J. A. McLean	40 00	" 20, 1903.
	Pleasant Bay—Politis Cove.		K. Fraser	40 00	" 20, 1903.
	Politis Cove—Halfway Shanty		E. Fraser.	30 00	" 20, 1903.
	Halfway Shanty—Meat Cove.		R. Fraser	40 00	" 20, 1903.
	General line man.		W. G. Smyth, Pt. Hood.	420 00	" July 1, 1903. Salary covers horse hire, &c.
	Totals.	109		1,400 00	

4-5 EDWARD VII., A. 1905

GOVERNMENT TELEGRAPH SERVICE—Continued.  
NORTH SYDNEY—MEAT COVE AND PORT HAWKESBURY SECTION.

No.	Stations.	Interme- diate Distance.	Agents and Operators.	Salary per annum.	Date of Appointment.	Memo.
		Miles.		£ cts.		
1	Mabon .....	0	D. J. McDonald .....	50 00	" 1, 1903.	(See Mabon. Meat Cove section.)
2	Port Head .....	10	Miss A. McPherson .....	50 00	" 1, 1903.	
3	Julique .....	8	Miss M. McFarlane .....	50 00	" 1, 1903.	
4	Port Hastings .....	37	Miss E. McDonald .....	120 00	" 1, 1903.	
5	Port Hawkesbury .....	26	Angus Boyd .....	50 00	" 1, 1903.	
6	River Bourgeois .....	6	D. Morrison .....	100 00	Nov. 1, 1903.	Main Battery at St. Peters.
7	St. Peters .....	10	M. Brenner .....	50 00	" 1, 1903.	
8	Lower Lardos (½ mile loop) .....	5½	Miss Jessie Finlayson .....	50 00	" 1, 1903.	
9	Grand River .....	5	Miss May Hardy .....	50 00	" 1, 1903.	
10	Fourdu .....	5	Miss C. Grant .....	180 00	Jan. 16, 1904.	Repeating office.
11	Galabons (3 mile loop) .....	4	Wesley Townsend .....	50 00	Feb. 1, 1904.	\$50 additional to Main à Dieu agency for care of main battery.
12	Loulsburg .....	10	Miss Maud Dickson .....	50 00	June 1, 1904.	
13	Main à Dieu .....	1	E. E. Pope .....	50 00	Aug. 15, 1904.	
14	To cable landing .....	1½	J. T. Martel .....	50 00	" 1, 1904.	
15	Scatarie Island (Western Light) .....	7½	Win. J. Smyth .....			(See Mabon. Meat Cove section.)
	General lineum Port Hawkesbury and Meat Cove Section .....					
	Branch.					
	Galabons .....		No appointments, only the terminal offices in operation.			This line was opened for business Dec. 11, 1903.
	Junction (wire only, 3 miles) .....	35½				
	Marion Bridge .....					
	Perry Lewis .....					
	Leitch's Creek .....					
	North Sydney .....					
	Totals .....	199		430 00		

North Sydney transfer office, connection with W. U. Telegraph system.





4-5 EDWARD VII., A. 1905

GOVERNMENT TELEGRAPH SERVICE.—*Continued.*  
CHATHAM-ESCOMINAC, N.B., TELEGRAPH SYSTEM.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		%, etc.		
1	Chatham .....	0	Great North-western Telegraph Co. ....	185 00		This amount is paid for supervision of the line and office accommodation at Chatham.
2	Black Brook .....	5½	M. McDougall .....	50 00 or commission ..	July 1, 1904 .....	The commission is 25 p.c. of the Government line tariff receipts in each instance, and is guaranteed to amount to not less than \$50 per annum.
3	Baie du Vin .....	13	Mrs. M. Wilbison .....	50 00 "	Mar. 1, 1885 .....	
4	Lower Hawlicke .....	6	Mrs. M. Brimmer .....	50 00 "	Aug. 1, 1891 .....	
5	Escominac .....	3½	D. Lewis .....	50 00 "	Sept. 1, 1885 .....	
6	Point Escominac lighthouse .....	12	K. R. McLennan .....	50 00 "	Nov. 1, 1893 .....	\$12 per annum allowed for care of main battery at Point Escominac.
	Totals .....	42		435 00		

GROSSE ISLE QUARANTINE TELEGRAPH SYSTEM.

1	Quebec .....	0	Great North-western Telegraph Co. ....	185 00		This amount is paid for supervision of the line, and covers rent of pole line from Quebec to L'Ange Gardien, for which \$35 per annum is charged.
2	L'Ange Gardien .....	13			Mar. 1, 1885 .....	This commission is 25 p.c. of the Government line tariff in each instance, and guaranteed to amount to not less than \$50 per annum.
3	St. Pierre .....	4½	C. Turcott .....	50 00 or commission ..	April 7, 1896 .....	
4	St. Pierre .....	3½	M. Plante .....	50 00 "		
5	St. Laurent .....	6½	M. Gobeil .....	120 00 and 25 per cent commission ..	Sept. 15, 1888 .....	
6	St. Jean .....	7	P. Pouliot .....	120 00 and 25 per cent commission ..	July 1, 1888 .....	For local agency.
7	St. François .....	6½	O. Lemelin .....	480 00 per year .....	May 1, 1902 .....	Chief operator and repairer.
8	Isle-Réaux (including 2 knots cable) .....	34		50 00 or commission ..	" 15, 1900 .....	
9	Isle-Réaux (land line) .....	2½				
10	Grosse Isle quarantine office (including 2 knots cable) .....	3½	M. D. Masson .....	100 00 and 25 per cent commission ..	May 1, 1902 .....	\$4 per month for messenger serv. in summer, and \$12 p. annum allowed for care of main batf. at Gr. Isle.
11	Quarantine telephone sys- tem 2 wire line .....	1½				NOTE. The telephone system on Grosse Isle since May, 1893, has comprised 1½ miles of 2 wire line with 11 connections or stations.
	Totals .....	52½		1,155 00		

SESSIONAL PAPER No. 19

CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE TELEGRAPH SYSTEM.

CHICOUTIMI SECTION.

Loop Line (2 wires.)	St. Jean-St. Famille .....	P. Lefournau	5½	50 00 or commission.	April 2, 1904.
1 Bay St. Paul		F. Boivin.....		180 00 per annum. (25 p.c. commission)	Previous to April 1, 1885.....
2 St. Ursulin		J.A. Boivin.....	9	50 00 or commission	" " 1, 1885.....
3 La Gaiette.....		J.A. Gauthier, repairer	37	210 00	May 15, 1887.....
4 St. Alexis.....		S. Ouellette.....	37½	100 00	Aug. 25, 1902.....
5 St. Alphonse de Bagozville		Mrs. D. Simard.....	3	50 00 or commission	Nov. 1, 1899.....
6 Chicoutimi		A. Simard.....	11½	50 00	April 1, 1885.....
		G.N.W. Telegraph Co.		25 p.c. commission	Nov. 1, 1893.....
		J.J. Fortin, repairer.....		420 00 per annum.	June 1, 1897.....
			98		St. Jean.
				1,060 00	Plus \$25 per year for operating branch line to L'Anse-St. Jean.
					Plus \$12 per annum for care of main battery.
					J. Fortin's division includes the branch line to L'Anse-St. Jean.
<i>Branch Line.</i>					
7 St. Aleria.....		Mrs. D. Simard.....	0		
8 St. Felix d'Oris.....		Rev. H. Neveu.....	10	50 00	Nov. 1, 1903.....
9 L'Anse St. Jean.....		J.J. Martel, repairer	30	210 00	May 1, 1904.....
10 Petite Saguenay.....		R. Martel.....	8	50 00	Jan. 1, 1904.....
11 Anse Cheval.....		M. Tremblay.....	6	50 00	Sept. 1, 1903.....
St. Etienne.....		Price Bros.....	7	50 00	Nov. 1, 1903.....
St. Catharines Bay.....		G. Bonillemme (see North Shore W. B. Line)	17		
			78	410 00	
Totals.....			176	1,470 00	

MURRAY BAY ST. AGNES SECTION.

1 Murray Bay.....		Mrs. F. Vincent.....	0			(See Murray Bay, Beers) (see foot note.)
2 St. Agnes.....		Jos. Gaudreau.....	7½	\$50 00	Jan. 1, 1904.....	
Trinity (Guay).....		Jos. Guay.....	7	50 00	Dec. 1, 1903.....	
			14½	100 00		
Bay St. Paul.....		F. Boivin.....	0			(See Bay St. Paul, Chicoutimi section.)
1 Petite River.....		J.J. Bonelard.....	13	50 00	Dec. 1, 1903.....	(Payment at Bay St. Paul \$25 per year and \$12 per battery care, for operation of this branch to Petite River.)
			13	50 00		

Connections for these lines with the C. N. W. Telegraph System are made at Chicoutimi, Bay St. Paul and Murray Bay.



## SESSIONAL PAPER No. 19

5	St. Siméon .....	4	D. Gaudin .....	50 00	Dec.	1, 1887
6	Baie des Rochers .....	12	G. Savard .....	50 00	June	1887
7	St. Catharines Bay (Br. L. C.) .....	17	G. G. Boulton .....	100 00	Nov.	1886
8	St. Étienne .....	17	E. Bonilome (repr.) .....	210 00	Sept.	1, 1899
9	Tadoussac (1½ knot cable). .....	13	J. E. Caron .....	50 00	Nov.	1, 1888
10	Sagré Creek .....	12½	L. Malfais .....	50 00	Dec.	6, 1901
11	Br. from Tadoussac .....	15	M. Savard .....	50 00	April	1885
12	Bergeronnes .....	12	J. H. Topping .....	50 00	"	1885
13	Escoumins .....	8	P. Bonchard .....	50 00 or commission	May	6, 1892
14	Baie des Bacons .....	8	J. A. Puse .....	50 00 or commission	April	1885
15	Mile Vaches .....	11½	C. P. Easton .....	50 00 or commission	Sept.	1, 1903
16	Hamilton Cove .....	6	S. Bouchard .....	50 00 or commission	July	1, 1890
17	Portneuf light .....	7	E. Courdron (repr.) .....	420 00	April	1, 1888
18	Sault au Cochon .....	31	Mrs. A. Laurier, agt. & op. asst. opr. .....	500 00	Jan.	1, 1902
	Bersimis .....		E. Pope, dist. supt. .....	180 00	April	1885
	Totals .....			2,870 00		

Commission at 25 per cent, without guarantee at Baie des Bacons.  
Accommodation office.

Sault au Cochon closed September 30, 1896.

NOTE.—In the estimates the maintenance of the Chicoutimi and North Shore line is provided under head of North Shore Line. They are operated conjointly.

## NORTH SHORE (East of Bersimis).

1	P'te aux Outardes (cable) .....	12	H. Tremblay .....	50 00 or commission	Dec.	1, 1896
2	P'te Paradis (Manicouagan) cable landing .....	18				
3	Scoumils Mills 14 mile loop line from P'te Paradis .....	28	Accommodation .....	25 p.c. commission	Aug.	1901
4	River Godbout (cable) .....	26	N. A. Coucun .....	50 00 or commission	Oct.	15, 1885
5	P'te des Monts .....	18½	L. F. Faffard .....	50 00	Dec.	28, 1885
6	Trinity Bay West .....	5½	Z. Poulin .....	50 00	May	16, 1884
7	Trinity Bay East .....	2½	A. Bilodeau .....	25 p.c. commission	"	1, 1889
8	Caribou Islands .....	10½	I. Coucun .....		Sept.	1, 1889
9	P'te aux Anglais .....	10½	Paul Gédé .....	Accommodation office.	Jan.	10, 1895
10	Pontecost .....	6½	J. E. H. Tém, D. Supt .....	1,880 00 per annum.	Nov.	1, 1891
11	St. Marguerite .....	47½	Mrs. E. H. Tém, as opr .....	500 00	"	1, 1903
12	Clark City .....	5	A. Thériault .....	180 00	July	1, 1888
13	Seven Islands .....	17½	Accommodation office .....	25 p.c. commission	April	17, 1903
14	River Moisie .....	15½	J. P. E. Vignault, opr. .....	180 00 per annum.	Jan.	2, 1884
15	Pigon .....	28	J. L. N. Caron .....	540 00	May	29, 1902
16	Little River .....	29	J. Poirier .....	50 00 or commission	June	1, 1896
17	Sheldrake .....	15	Mrs. Peter Wright, op .....	100 00	Oct.	1, 1902
18	Thunder River .....	6½	Peter Wright, repr. .....	112 00	"	1, 1902
19	Magpie .....	14	Miss H. Leberge .....	50 00	"	10, 1900
20	St. John's River .....	9	Mrs. H. Cady .....	50 00	"	1, 1897
			Geo. Molloy .....	50 00	Feb.	1, 1890
			B. Chambers .....	50 00	Oct.	1, 1889
					"	1, 1889

The repeating office formerly at Manicouagan was removed to Bersimis in September, 1896.

No commission is paid at this office.

Plus 50 cents per day when absent on duty.

4-5 EDWARD VII., A. 1905

## GOVERNMENT TELEGRAPH SERVICE—Continued.

CHICOUTIMI AND NORTH OF ST. LAWRENCE TELEGRAPH SYSTEM—Continued. NORTH SHORE (East of Bersimis).

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
20	Long Point.....	10	A. Maloney.....	500 00	Sept. 21, 1896.....	Long Point is the repeating office for the Anticosti, cable in operation since September 1, 1891. The salary was increased from \$360 since Nov. 1. Allowance for office rent \$4 per month. Plus 50 cents per day when absent on duty.
21	Mingan.....	7	Mrs. A. Maloney, as, opr.	180 00	Nov. 1, 1900.....	
22	Point Esquimaux.....	24	M. J. Maloney.....	50 00 or commission	Oct. 1, 1889.....	
23	Betchouanes.....	30	Mrs. D. C. Hould.....	240 00 per annum	Sept. 1, 1897.....	
24	Piastre Bay.....	23	Edwd. Cyr, inspr.....	500 00	Nov. 2, 1902.....	This office was closed on withdrawal of former agent from Sept. 4, 1903, \$12 rent to J. Beetz.
25	Watehou.....	15	Alfid. Bodreau, repr.....	112 00	Sept. 1, 1902.....	
26	Aguamus.....	21½	Mrs. A. Bodreau, opr.....	100 00	Sept. 1, 1902.....	
27	Natashquan.....	21	S. Tanguay, repr.....	112 00	" 18, 1902.....	
28	Kegaska.....	33	Mrs. J. Beetz, opr.....	100 00	" 18, 1902.....	
29	Masquaro.....	18	Mrs. Cl. Bourque, opr.....	100 00	Dec. 1, 1903.....	
30	Roumaine.....	25	John Bourque, repr.....	112 00	Sept. 3, 1902.....	
31	Wolf Bay.....	24	S. Galant, repr.....	100 00	" 3, 1902.....	
32	Pt. au Maurier.....	24	Mrs. Galant, opr.....	112 00	" 5, 1902.....	
33	Harrington.....	20	C. Vignault, repr.....	100 00	" 5, 1902.....	
34	Whale Head.....	17	Miss Vignault, opr.....	112 00	" 16, 1902.....	Plus 50 cents per day when absent on duty.
35	Mutton Bay.....	20	Geo. Anderson, repr.....	100 00	" 16, 1902.....	
36	Bay de Ha.....	27	J. W. Osborne, inspr.....	500 00	" 1, 1902.....	
37	St. Augustine.....	27	Wm. Foreman, opr. & rep.....	212 00	June 1, 1903.....	
38	Coxipi.....	24	M. Blais, repr.....	112 00	Sept. 17, 1902.....	Not yet opened.
39	Rockey Bay.....	30	Miss R. Blais, opr.....	100 00	" 17, 1902.....	
40	St. Paul River.....	21	R. Jones, repr.....	112 00	Nov. 26, 1902.....	
41	Brador Bay.....	29	Miss R. Jones, opr.....	100 00	" 26, 1902.....	
			J. Galibois, repr.....	112 00	Sept. 19, 1902.....	This office was closed from Sept. 7, 1903, the former agent having left the place.
			Miss P. Galibois, opr.....	100 00	" 19, 1902.....	
			J. Jones, repr.....	112 00	" 20, 1902.....	
			Mrs. Jones, opr.....	100 00	" 20, 1902.....	
			Nap. Nadeau, rep. & opr.....	212 00	Jan. 21, 1903.....	Plus 50 cents per day when absent on duty.
			A. E. Cormier, rep. & opr.....	444 00	June 1, 1902.....	
			G. W. Barges, rep. & opr.....	212 00 per annum	Sept. 25, 1902.....	
			Jos. Picard, rep. & opr.....	212 00	Dec. 16, 1902.....	
			Miss B. E. Chevalier, o.....	100 00	April 20, 1904.....	This office was closed from Sept. 7, 1903, the former agent having left the place.
			L. O. Chevalier, repr.....	112 00	" 20, 1904.....	
			G. Chevalier, repr.....	112 00	Oct. 2, 1902.....	
			Miss Chevalier, opr.....	100 00	" 2, 1902.....	
			Johnny Jones, opr.....	100 00	June 13, 1903.....	Plus 50 cents per day when absent on duty.
			P. C. Vignault, inspr.....	500 00	Feb. 1, 1903.....	

## SESSIONAL PAPER No. 19

		ONTARIO—PELEE ISLAND TELEGRAPH SERVICE.			
		Thos. Morel, repr. & opr.	212 00	"	Oct. 1, 1902
42	Blanc Sablon.....	6	212 00	"	July 19, 1902
43	Forteau Bay.....	13	212 00	"	July 17, 1903
44	Pointe Amour.....	17	212 00	"	Oct. 3, 1902
45	Western Mediste.....	16	112 00	"	" 9, 1902
46	Red Bay.....	18	100 00	"	Sept. 1, 1902
47	Chateau Bay.....	30	500 00	"	Dec. 1, 1902
48	Belle Isle.....	23½	180 00	"	Nov. 1, 1903
			360 00	"	Sept. 14, 1901
	Totals.....	916	11,486 00		
		The cable formerly 4½ knots from Point Pelee to the Island is now laid as here indicated 17 knots. The change was effected in August, 1901.			
		J. McR. Selkirk, D. Supt.	50 00	Nov.	1, 1888
1	Leamington.....	2	Accommodation office	"	1, 1895
2	" Dock.....	5	Commission 25 p. c.....	April	1, 1889
3	Club House.....	5	"	Nov.	1, 1888
4	Point Pelee.....	17	Commission 25 p. c.....	June	1, 1899
5	Leamington Dock to North Point Cable.....	2	"	Nov.	1, 1888
6	North Point Lighthouse.....	24	"	"	1, 1896
7	North Dock.....	2½	"	"	9, 1888
8	McIntyre's Corner.....	5½	"	July	1, 1900
9	West Dock.....		50 00		
	Totals.....	42½			

NOTE.—This line is operated with telephones.

4-5 EDWARD VII., A. 1905

GOVERNMENT TELEGRAPH SERVICE *Continued.*  
LINES IN THE NORTH-WEST TERRITORIES.

No.	Stations.	Inter- mediate Distance.	Agents.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Qu'Appelle-Edmonton Sec.</i>	Miles.		\$	cts.	
1	Qu'Appelle.....	0	(J. S. Macdonald, D. Supt. C. P. R. Tel. Co.)	1,800 00	Jan. 1, 1898	Salary increased from \$1,200 since November 1, 1903. The agent-operator at Qu'Appelle is joint with the C. P. R. Salary increased from \$340, since November 1, 1903.
2	Fort Qu'Appelle.....	17	(J. W. Wilson, lineman.....)	420 00	Dec. 1, 1896	
3	Touchwood.....	46	Miss E. Johnston.....	500 00	March 1, 1902	
4	Humbolt.....	78	H. VonLandburg.....	600 00	" 1, 1885	
5	Saskatoon (14 miles loop)...	69	(C. P. R. Tel. Co.)	720 00	Nov. 1, 1883	
6	Honrietta.....	52	(T. G. Clement.....)	300 00	Sept. 1, 1904	Salary increased from \$600, since Nov. 1, 1903.
7	Battleford.....	47	(W. Salisbury.....)	600 00	Jan. 1, 1892	The agt.-operator at Saskatoon is joint with the C. P. R.
8	Bresaylor.....	27	(D. Noel.....)	720 00	Oct. 1, 1900	
9	Pitt.....	62	T. J. Callahan.....	720 00	Dec. 1, 1900	Transferred from Bresaylor, 1st Sept. 1904.
10	Lloydminster loop (2 wires)	13	E. McCloughan.....	600 00	April 1, 1900	" Battleford
11	Onion Lake.....	324	H. McCloughan.....	720 00	Oct. 1, 1900	Closed since October 1898. Office temporarily opened May 1, fill Aug. 6, 1904 for Immigration Dept.
12	St. Paul de Medis.....	32	G. G. Mann.....	720 00	Aug. 1, 1902	Salary increased from \$600, since Nov. 1, 1903.
13	Saddle Lake.....	43	M. Thérien.....	600 00	Dec. 1, 1899	" "
14	Andrew Loop (2 wires).....	37	J. W. Carroll.....	720 00	Sept. 1, 1900	" \$240
15	Victoria.....	6	A. K. Morrison.....	600 00	June 7, 1904	A telephone line extends from the office at Saddle Lake to the Indian School 6½ miles. Salary increased from \$600 since Nov. 1, 1903.
16	Star.....	43	J. C. Gordon.....	720 00	April 1, 1899	Salary increased from \$600, since Nov. 1, 1903.
17	Ft. Saskatchewan.....	24	E. A. Holmes.....	600 00	Aug. 2, 1904	
18	Edmonton.....	98	A. W. M. Campbell.....	720 00	Oct. 1, 1898	
19	Arkhaska Landing.....		(T. J. McNamara.....)	600 00	May 1, 1901	Salary increased from \$300, from Aug. 1, 1904. The office at Edmonton has been operated jointly with the C. P. R. Tel. Co. since Jan. 1, 1892.
	Totals.....	723	(W. McKay, lineman.....)	15,020 00	Oct. 1, 1904	

## SESSIONAL PAPER No. 19

<i>Branch Line.</i>			This branch line operated by the Edmonton District Telephone Co.		
20	Edmonton .....	0			
21	St. Albert .....	9			
22	River Qui Barre .....	21			
	Alexandria .....	6			
		36			
	Edmonton .....	0			
	Indian Agency .....	14			
	Spence Grove .....	5			
		19			
<i>Wood Mountain Section.</i>			This branch is operated as a telephone line. Construction completed October 1904.		
1	Moosejaw .....	0			
2	Wood Mountain .....	90 $\frac{1}{2}$			
3	Willow Branch .....	38			
		128 $\frac{1}{2}$			
<i>Duck Lake Section.</i>			Moosejaw office is operated jointly with the Canadian Pacific Telegraph Co.		
1	Patoche .....	0			
2	Duck Lake .....	9			
3	Indian Agency .....	3 $\frac{1}{2}$			
		12 $\frac{1}{2}$			
					Telephone connection.

## BRITISH COLUMBIA.

No.	Offices.	Inter- mediate Distance.	Agents, &c.	Positions	Salaries per Annum.		Date of Appointment.	Memo.
					\$	cts.		
	<i>Kamloops—Lower Nicola.</i>		(See note in margin)					
	<i>Telephone Line.</i>							
1	Kamloops .....	0	J. C. S. Stevens .....	Ag't, opr.	300 00		June 1, 1904	Note.—This line is operated under the superintendence of the resident engineer at Victoria, and for conversations 25c. for 5 minutes, half that rate for each additional 5 minutes or fraction thereof.
2	Anderson Creek .....	12	W. McLeod .....	Lessee			July 1901	
3	Nicola Valley .....	13	W. R. McDonald .....	"			" 1901	Note.—The lessees pay a monthly rent for the connections, and are allowed 25 per cent commission on local tolls for messages and conversations of non-subscribers.
4	Stumps Lake .....	13	Thos. Bullman .....	"			" 1901	
5	Beaver Ranch .....	20	J. W. Moor .....	"			" 1901	Three additional connections in July 1901.
6	Quidelta .....	9	E. O'Rourke .....	"			May 1900	
7	Nicola Lake .....	9	A. E. House .....	"			July 1901	Add at Nicola Lake, July 1, or Government Office Dr. Sutton, A. R. Carrington.
8	Cantlaw .....	13	Blair & Co. ....	"			May 1900	
9	Lower Nicola .....		G. Armstrong .....	"				
	Total .....	67						



4-5 EDWARD VII., A. 1905

GOVERNMENT TELEGRAPH SERVICE—Continued.  
BRITISH COLUMBIA—Continued.

No.	Offices.	Inter- mediate Distance.	Agents, &c.	Positions.	Salaries per Annum.	Date of Appoint- ment.	Memo.
	<i>Nanaimo-Comox.</i>	Miles.			§ cts.		
1	Nanaimo .....	0	W. F. Archibald, (A. M. Oliver, joint with C.P.R.)	Agent and operator.	305 00	Mar. 1, 1896	The amount comprises \$20 per month for agency and operation, \$3 for messenger service and \$2.50 for battery care.
2	Wellington.....	5	E. & N. Ry. Co., (Mrs. R. Williams,	Assistant operator ..	120 00	June 1, 1902	
3	Parksville .....	23	W. Mills, (Miss E. McDo- nald.)	Agent and operator ..	360 00	April 1, 1893 Dec. 1, 1897	
4	Union Bay .....	32½	Thos. Hudson..	Lineman .....	360 00	June 1, 1903	Parksville, Quelicum section.
5	Union Mines .....		J. Dunsinuir.	Agent and operator. Lineman .....	780 00	" 3, 1898 Nov. 17, 1898	See mention of this in body of report (1897-98).
6	Camberland .....	10	Albert Peacy .....	Accommodat. office.	120 00		
7	Courtney .....	7	M. McDonald .....	Agent and operator.	{ com. 25 p.c.	Apr. 28, 1898	Courtney and Comox communicated by telephone at prear- ranged intervals.
8	Comox .....	3½		Agent and operator.	360 00	Nov. 1, 1895	
	Total .....	81			2,765 00		
	<i>Parksville, Alberni and Cape Beale Line.</i>						
1	Parksville .....	0	(See above)	Agent and operator.	240 00	Oct. 1, 1899	Proportion of salary for Comox line included. Proportion of salary for this line.
2	Alberni .....	29½	Mrs. P. A. Haslam M. Patterson .....	"	240 00	May 1, 1900	
	Cape Beale .....	57			480 00		
	<i>Alberni-Clayoquot Line.</i>						
1	Alberni .....	0	P. A. Haslam .....	Agent and operator.	120 00	Dec. 1, 1902	Proportion for this line.
2	New Alberni .....	2	(E. B. Gerrard .....	Agent lineman .....	660 00	" 1, 1902	Section extends from Franklin Creek to Pipestem Inlet, post office address, New Alberni.
	Franklin Creek ½ mile cable.	8	(E. A. Waterland .....	Agent and operator ..	Can. 2 p.c.	Oct. 1, 1903	Line crosses canal at this point by submarine cable.
3	Ucluelet .....	29½	(W. L. Thompson .....	Agent lineman .....	720 00	Dec. 1, 1902	
			(H. J. Hillier .....	Lineman .....	660 00	" 1, 1902	

NOTE.—The repairs of this line has been done jointly with the  
Can. Pac. Telegraph since December 1, 1902.

## SESSIONAL PAPER No. 19

1	Clayoquot.....	66}	E. S. Reeve.....	720 00	"	1, 1902	Private cable connection for local firm.
	Stablos Island.....		Accommodation office.....				
	Totals.....	96}		2,880 00			
	<i>Golden Windermere Line.</i>						
1	Wilmer.....	0	R. A. Power.....	720 00	Jan. 1, 1902		
2	Athabuer.....	5	Telephone Com'n.....				Operated from Windermere, Wilmer and Spillimacheen.
3	Windermere.....	5	".....				" Spillimacheen
4	Spillimacheen.....	16	(V. F. Dunn.....	900 00	Jan. 1, 1902		Local superintendent.
			Telep. Connection.....				Operated from Windermere, Wilmer and Athabuer.
5	Golden.....	66	R. N. Young.....	300 00	Mar. 1, 1902		Joint agent with C. P. Tel.
	Totals.....	92		1,920 00			

4-5 EDWARD VII., A. 1905

GOVERNMENT TELEGRAPH SERVICE—*Concluded.*BRITISH COLUMBIA—*Concluded.*

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Victoria—Cape Beale.</i>	Miles.		\$ cts.		
1	Victoria.....	0	(See note in margin).	200 00	Nov. 1, 1891.	NOTE.—The superintendence of this line has been in the hands of the resident engineer at Victoria since October, 1901, when the arrangement theretofore in operation with the C. P. Ry. Co. was terminated. Proportion of salary.
2	Sooke.....	18	E. Houghton, oper. (C. P. Tel.)		Dec. 1, 1891.	
3	Otter Point.....	8	E. Gordon, agt. and operator.	720 00	" 1, 1903.	
4	Jordan River (Shirley).....	10	Percy Clark.....	540 00	Sept. 22, 1903.	
5	Port San Juan (Port Renfrew)	30	E. C. Williams.....	240 00	" 22, 1903.	
6	Carmnanah Lighthouse.....	24	W. G. H. Ellison, repairer..	520 00	Nov. 1, 1891.	
	(Clooose 2 miles west).		W. P. Daykin, repairer.....	240 00	April 1, 1898.	
			D. Logan, repairer.....	540 00	Mar. 6, 1901.	
			Otto Rosander, repairer.....	540 00	Sept. 1, 1899.	
			M. Patterson, agt. & operator	120 00		
	Totals.....	118		3,660 00		
	<i>Vancouver-Salt Springs Line.</i>					
1	Duncan Station.....	9	E. & N. Ry. Co.....	Accommodation.	Mar. 1, 1902.	There have been no staff appointments on this line, it being worked by telephone for the present merely for general convenience, and looked after by the persons directly interested.
2	Maple Bay.....	3	Wm. Beaumont.....	"	" 1, 1902.	
3	Saason Narrows to Salt Springs (cable).....	0 <sup>1</sup> / <sub>2</sub>				
4	Edwards' Store.....	3	Edwards & Co.....	Accommodation.	" 1, 1902.	
5	Ganges Harbour.....	9		"	" 1, 1904.	
	Totals.....	24 <sup>1</sup> / <sub>2</sub>				

SESSIONAL PAPER No. 19

## GOVERNMENT TELEGRAPH SERVICE.

## YUKON LINES.

NAMES of employees and monthly salaries, &c., Yukon Telegraph Service, which includes Port Simpson, Barkerville, Quesnelle and Lillooet branches.

(Compiled from pay sheets of June and July 1904.)

Number.	Office.	Inter- mediate Distance.	Positions.	Salaries per Month.		Tariff		Night Rate.
				£	cts.	£	cts.	
			C. E. Gooding, manager	60	00			
			H. B. Rochester, operator	42	00			
			G. L. Hall, operator	45	00			
1	Ashcroft		T. R. Clark	45	00			
			G. H. Dean	45	00			
			S. Pritchard, lineman	75	00			
			P. R. Quain, Dist. Supt. Clerk	83	33			
			J. T. Phelan	175	00			
2	Pavilion	40	F. C. Schanz, operator	60	00	25 and	2	25 and 1
3	Lillooet	22	S. A. MacFarlane, opr.&linem	60	00	25 "	2	25 " 1
4	Cash Creek	4	Accommodation office, lineman	50 p. c. com.		25 "	2	25 " 1
5	Clinton	26	A. LeBourdais	60	00	25 "	2	25 " 1
6	115 Mile House	55	S. Hannah	60	00	25 "	2	25 " 1
7	150 "	35	T. S. Hall	60	00	50 "	3	30 " 2
8	Harpers Camp	33	S. H. Patenaude	40	00	50 "	3	30 " 2
9	Bullion	27				50 "	3	
10	Quesnel Forks	4	O. Landry office, lineman	66	66	50 "	3	30 " 2
11	Soda Creek	42	C. H. Smith	60	00	50 "	3	30 " 2
12	Alexandria	28	G. A. Broughton office, lineman	60	00	50 "	3	30 " 2
13	Quesnel	26	T. F. Murphy, operator	60	00	50 "	3	30 " 2
			O. Earley, lineman	60	00	50 "	3	
			J. Mooney	83 per day		50 "	3	
14	Lafontaine†	46	Cariboo Consolidated Co	50 p. c. com.		50 "	3	
15	Barkerville‡	15	J. Stone, operator and lineman	60	00	50 "	3	
16	Blackwater	53	J. McNeill	70	00	75 "	5	
17	Bobtail Lake	45	J. W. Howison, operator	75	00	75 "	5	
			J. A. Holder, lineman	70	00	75 "	5	
18	Stoney Creek	35	W. F. Manson, operator	75	00	75 "	5	
			J. D. Charleson, lineman	70	00	75 "	5	
19	Fraser Lake	35	G. N. Proctor, operator	75	00	75 "	5	
			M. McNevin, lineman	70	00	75 "	5	
20	Burns Lake	69	W. Heinz, operator	75	00	75 "	5	
			B. Lashbrook, lineman	70	00	75 "	5	
21	South Backley	30	N. McInnis, operator	75	00	75 "	5	
			E. Barrett, lineman	70	00			
22	North Backley	25				100 "	7	
23	Buckley Roach	27	L. Broughton, operator	75	00	100 "	7	
			H. Fink, lineman	70	00			
24	Morricetown	35	T. F. Cowan, operator	75	00	125 "	10	
			W. J. Toneri, lineman	70	00			
25	Hazleton	40	G. M. Swan, operator	100	00	125 "	10	
			E. R. Cox, lineman	100	00			
			J. C. K. Seeley, lineman	75	00			
			E. E. Charleson, for man store &c	150	00			
26	Meanskinsht§	35	E. Tomlinson, operator	50	00	125 "	10	
			R. Tomlinson, lineman	75	00	125 "	10	
27	Skeena Canyon §	47	A. Daoust, operator	75	00			
			C. Durban, lineman	70	00			
			F. Dresser	70	00			
28	Lorn Creek §	24	A. J. West, operator	75	00	125 "	10	
			J. D. McIntosh, lineman	75	00			
29	Telegraph Point §	53	W. J. O'Neill, operator	75	00	150 "	10	
			C. Peterson, lineman	70	00			
30	Aberdeen §	4½	G. Coutu, operator	75	00	150 "	10	
			B. F. St. Amour, lineman	70	00			

†Br. from Ashcroft.

‡Br. from 150 Mile House.

§Br. from Quesnelle.

§Br. from Hazleton.

4-5 EDWARD VII., A. 1905

GOVERNMENT TELEGRAPH SERVICE—*Continued.*NAMES of employees and monthly salaries, &c., Yukon Telegraph Service, &c.—*Con.*YUKON LINES—*Continued.*

Number.	Office.	Inter- mediate Distance.	Positions.	Salaries per Month.	Tariff.	Night Rate.
				\$ cts.	\$ cts.	
31	Port Simpson.	39	M. W. O'Neill, operator.	50 00	150 " 10	
32	1st Cabin.	27	H. A. Cullon " "	75 00	125 " 10	
			Hugh Taylor, lineman.	70 00		
33	Kuldo.	28	G. T. Carpenter " "	70 00		
			G. W. Smith " "	70 00		
34	3rd Cabin	25	Chas. Martin, operator.	75 00		
35	4th Cabin	20	P. Burnell " "	75 00		
			J. McMenamin, lineman.	70 00		
36	5th Cabin.	20	E. A. Hawley, operator.	100 00		
			C. E. Loucks, lineman.	\$3 per day		
37	6th Cabin.	20	G. T. Brown, operator.	100 00		
			W. Ross, lineman.	\$3 per day		
38	7th Cabin.	19	J. A. Armstrong, operator.	100 00		
			L. Dubois, lineman.	\$3 per day		
39	8th Cabin.	19	J. Muir, operator.	100 00		
			G. Duhamel, lineman.	\$3 per day		
40	9th Cabin.	17	T. E. Harkin, operator.	100 00		
			G. Hill, lineman.	\$3 per day		
41	Echo Lake.	32	J. Patterson, operator.	100 00	150 and 10	
			F. N. Jackson, lineman.	\$3 per day		
42	25-Mile Cabin	25	Jas. Murie, operator.	100 00		
			J. W. Hovey, lineman.	\$3 per day		
43	Iskoot.	16	J. W. Watts, operator.	100 00	150 " 10	
			J. Lonery, lineman.	\$3 per day		
44	Telegraph Creek.	61	A. S. Gillespie, operator.	100 00	175 " 10	
			W. S. Simpson, lineman.	75 00		
			A. J. Charleson, storekeeper.	150 00		
45	Shesley.	45	A. Johnson, operator.	82 50	175 " 10	
			J. Craig, lineman.	75 00		
46	Nahlin.	61	S. G. Lawrence.	82 50	185 " 10	
			R. McKay, lineman.	75 00		
47	Nakina.	49	R. P. Hall, operator.	82 50	185 " 10	
			J. Huston, lineman.	75 00		
48	Pike River.	40	Geo. Coutts, operator.	82 50	200 " 15	
			J. A. Thorne, lineman.	\$3 per day		
49	Graveyard Point.		S. W. Dobie, operator.	75 00		
			J. D. Wells, lineman.	70 00		
			A. E. Johnston, lineman.	70 00		
50	Atlin.	23	F. W. Dowling, day operator.	116 66	200 " 15	
			A. B. Taylor, night operator.	100 00		
			H. D. Gagné, foreman.	125 00		
51	Center Cabin.	35	J. Stronach.	82 50		
52	Tagish.	40	M. R. Grimes, operator.	82 50	225 " 15	
53	Cariboo Crossing.	18	Adam Dickson, lineman.	75 00	225 " 15	
54	Whitehorse.	65	A. B. Clegg, dist. supt.	175 00	250 " 15	
			H. Gilchen, store-keeper.	150 00		
			J. P. Champagne, clerk.	112 50		
			G. S. Flemming, operator.	115 00		
			G. W. Marshall, lineman.	75 00		
			Mrs. Jefferies, house kpr & cook.	75 00		
			Bruce Watson, messenger.	35 00		
55	Lower Leberge.	59	D. Potts, operator.	82 50	250 " 15	
			J. H. Brown, lineman.	75 00		
56	Hootalinqua.	30	J. W. Graham, operator.	82 50	250 " 15	
57	Big Salmon.	34	H. O. Lakkin, lineman.	75 00	250 " 15	
58	Five Fingers.	96	W. S. Langtree, operator.	82 50	275 " 15	
59	Yukon Crossing.	8	J. Hope.	82 50		
60	Fort Sil Kirk.	50	E. K. Waller, operator.	82 50	275 " 15	
61	Selwyn.	30	J. W. Wilson, operator.	82 50	275 " 15	
62	Stewart River.	75	Chas. N. Graham, operator.	82 50	300 " 20	

## SESSIONAL PAPER No. 19

GOVERNMENT TELEGRAPH SERVICE—*Continued.*NAMES of employees and monthly salaries, &c., Yukon Telegraph Service, &c.—*Con.*YUKON LINES—*Continued.*

Number.	Office.	Inter- mediate Distance.	Positions.	Salaries per Month.	Tariff.	Night Rate.
				\$ cts.	\$ cts.	\$ cts.
63	Ogilvie.....	23	J. P. Beausoleil, operator.....	82 50	300 " 20'	
			S. V. Clem, lineman.....	75 00		
64	Dawson.....	48	W. Brownlow, manager.....	150 00	300 " 20	
			C. A. Couture, foreman.....	125 00		
			G. A. McLachlan, day opr.....	125 00		
			F. A. Hanley, night oper.....	125 00		
			R. C. MacDonald, clerk.....	100 00		
			H. Douglas, messenger.....	83 per day		
			Wm. Gross, lineman.....	80 00		
			Mrs. D. Hunt, house kpr & cook.....	100 00		
65	Forty Mile.....	55	W. Boyd, operator.....	82 50	325 " 20	
66	Boundary.....	40			325 " 20	
	Supt. office.....		J. Y. Rochester, act. supt.....	200 00		
	Vancouver, B.C.....		J. J. Healy, clerk.....	140 00		
			Emma Hays, stenographer.....	65 00		
		2,252½		9,513 65		
			Add 10 persons 83 per day as above.....	900 00		
			Total monthly salaries say.....	\$10,400 00		

## YUKON TARIFFS.

The rates given above for points north of Quesnel are one-third less than those primarily adopted, which were calculated on the general basis of 50 cents for 100 miles and 25 cents for each additional 100 miles, counting the distance from Ashcroft.

The local rates between offices north of Quesnel are calculated on the basis of 50 cents for 100 miles and 25 cents for each additional 100 miles, and the local rates between offices north of Atlin are fixed at 50 cents for each 100 miles.

*Cable Messages.*—On transatlantic business the word rate is twice as much as the additional word rate given in the list for all points north of Ashcroft:—Barkerville,  $3 \times 2 = 6c.$ ; Dawson  $20 \times 2 = 40c.$  per word.

On transpacific business the word rate is the additional word rate plus 4c.: Barkerville,  $3 + 4 = 7c.$ ; Dawson,  $20 + 4 = 24c.$  per word to or from Ashcroft.

*Press despatches.*—For the Yukon line the rate is 1 cent per word, minimum charge \$1; this applies to the whole line.

Yukon system connects at Boundary with U. S. Sig. Service Telegraph System.

\* Where the tariff rate is entered as 25-1 or 50-2, &c., the meaning is that the rate is 25 cents or 50 cents for ten words and 1 cent or 2 cents for each additional word.

4-5 EDWARD VII., A. 1905

## GOVERNMENT TELEGRAPH LINES.

## SPECIAL TARIFF.

*Cable messages.*—Rates for cable messages passing over the Yukon line will be found in connection with the Yukon tariff in the following pages.

Elsewhere, the rate for transatlantic messages passing over the government lines is the same as for ordinary through messages, excepting where the ordinary tariff is more than 25 cents; in such cases the government line rate is 4 cents per word, with a minimum charge of 25 cents. For example :—

For a message of six words or less the charge is 25 cents for government line.

For a message of seven words the charge is (7 x 4) 28 cents for government line.

For a message of twelve words the charge is (12 x 4) 48 cents for government line.

In every case the counting of words includes the address and signature in the same way as for transatlantic cable tolls.

*Press despatches.*—The rate for press despatches on the government lines (excepting the Yukon line), is 20 cents per 100 words; no single message less than 20 cents.

For the Yukon line the rate is 1 cent per word, minimum charge \$1; this applies to the whole line.

## REGULAR TARIFF.

## NOVA SCOTIA.

*Line from North Sidney to Meat Cove and Mabou—Local rate 25-1\* (20 offices.)*

Big Bras d'Or.. . . .	Through rate 15-1 from North Sydney, W. U. office.		
New Campbellton's (Kelly's Cove).....	"	"	"
Englishtown.. . . .	"	"	"
Baddeck.. . . .	"	"	"
Murray.. . . .	"	"	"
Indian Brook.. . . .	"	"	"
French River.. . . .	"	"	"
South Ingonish.. . . .	"	"	"
Ingonish.. . . .	"	"	"
Neil's Harbour.. . . .	"	"	"
Dingwall.. . . .	"	"	"
Aspy Bay.. . . .	"	"	"
Meat Cove.. . . .	"	"	"
Pleasant Bay.. . . .	"	"	"
Cheticamp.. . . .	"	"	"
Grand Etang.. . . .	"	"	"
North-East Margaree.. . .	"	"	"
Margaree Harbour.. . . .	"	"	"
South-West Margaree.. . .	"	"	"
Inverness Town (Broad Cove)	"	"	"

*Night messages* are exchanged with the Western Union Telegraph Company for offices on this line. Rate 1 cent per word with minimum of 15 cents. The local night rate is 1 cent per word with minimum of 25 cents.

\*When the tariff rate is entered as 25-1 or 50-2, &c., the meaning is that the rate is 25 cents or 50 cents for ten words and 1 cent or 2 cents for each additional word.

## SESSIONAL PAPER No. 19

*Line from Barrington to Cape Sable—Local rate 12-1.*

Newellton. . . . .	Through rate 12-1 from Barrington, W. U. office		
Cape Sable Lighthouse. . . . .	"	"	"

This line is now operated by the local telephone company. Terms of lease provide for former telegraph rate as above not being exceeded.

## NEW BRUNSWICK.

*Line from Chatham to Point Escuminac—Local rate 25-1 (4 offices.)*

Bay du Vin. . . . .	Through rate 15-1 from Chatham, G. N. W. office.		
Lower Hardwicke. . . . .	"	"	"
Escuminac. . . . .	"	"	"
Pt. Escuminac Lt. House. . . . .	"	"	"

*Line from Eastport, Me., to Campobello, Grand Manan, and Whitehead Islands (9 offices)—Local rates between offices on Grand Manan, and Whitehead Islands, 15-1; Grand Manan and Campobello Island 25-2; The Islands and Eastport, Me., 25-2, W.U.O.*

Welchpool, Campobello. . . . .	Through rate 25-2 from Eastport, Me., W. U. office.		
Flagg's Cove, Grand Manan. . . . .	"	"	"
Castalia. . . . .	"	"	"
Woodward's Cove. . . . .	"	"	"
Grand Harbour. . . . .	"	"	"
Seal Cove. . . . .	"	"	"
Southern Head. . . . .	"	"	"
Cheney's Head. . . . .	"	"	"
Whitehead Islands. . . . .	"	"	"

## QUEBEC.

*Line from Gaspé to Anticosti Island, Q. (9 offices)—Local rates between offices on the Island 25-1; Gaspé and the Island offices 50-2.*

South-West Point. . . . .	Through rate 50-2 from Gaspé, G. N. W. office.		
Salt Lake. . . . .	"	"	"
Shallop Creek. . . . .	"	"	"
South Point. . . . .	"	"	"
Heath Point. . . . .	"	"	"
Fox Bay. . . . .	"	"	"
Beesie River. . . . .	"	"	"
West Point. . . . .	"	"	"
English Bay. . . . .	"	"	"

*Line from Meat Cove, C.B., N.S., to Magdalen Islands, Q. (9 offices)—Local rates between offices on the Islands 25-1; Meat Cove and the Islands 50-2; offices on the Meat Cove line and the Islands 50-2.*

Amherst Island. . . . .	Through rate 50-2 from North Sydney, W. U. office.		
Amherst Lt. House. . . . .	"	"	"
Etang du Nord Village. . . . .	"	"	"
Etang du Nord Lt. House. . . . .	"	"	"
Cap aux Meules (Grindstone). . . . .	"	"	"
House Harbour. . . . .	"	"	"
Grosse Isle. . . . .	"	"	"
Grand Entry. . . . .	"	"	"
Bryon Island. . . . .	"	"	"



4-5 EDWARD VII., A. 1905

*Line from Meat Cove, C.B., N.S., to St. Paul's Island—Local rate between offices on Meat Cove line and St. Paul's 50-2 (1 office).*

St. Paul's Island Lt. House 50-2 from North Sydney, N.S., W.U. office.

*Line from Quebec to Grosse Isle Quarantine Station (7 offices)—Local rates between offices on Orleans Island and Isle Réaux, 15-1; on Orleans Island, Isle Réaux and Quebec 15-1; on Orleans Island and Grosse Isle 25-1; on Isle Réaux and Grosse Isle 15-1.*

St. Pierre, Orléans Island..	Through rate	15-1	from Quebec, G. N. W. office.
Ste. Pétronille . . . . .	"	"	"
St. Laurent . . . . .	"	"	"
St. Jean . . . . .	"	"	"
St. François . . . . .	"	"	"
Isle Réaux . . . . .	"	"	"
Grosse Isle . . . . .	"	25-1	"

*Line from Baie St Paul to Chicoutimi (7 offices).*

For business with offices west of Baie St. Paul and terminating at Quebec, add 15c. and 1c. to the government line tariff.

For business with offices west of Baie St. Paul, beyond Quebec, add the full rate of the Great North-Western Telegraph Company to the government line tariff.

*Line from Murray Bay to Chateau Bay (48 offices) with branch to Anticosti and extension to Belle Isle.*

For business with offices west of Murray Bay and terminating at Quebec, add 15c. and 1c. to the government line tariff.

For business with offices west of Murray Bay, beyond Quebec, add the full rate of the Great North-Western Telegraph Company to the government line tariff.

*Local rates between offices not more than 100 miles apart 15-1; more than 100 miles apart 25-1; on mainland and Anticosti 50-2; and on mainland and Belle Isle 50-2.*

St. Urbain . . . . .	15-1	from Baie St. Paul (Ck. Que.)	G. N. W. office.
Lacruche . . . . .	"	"	"
St. Alexis . . . . .	"	"	"
L'Anse St. Jean . . . . .	"	"	"
St. Alphonse de Bagotville..	"	"	"
Chicoutimi . . . . .	"	"	"
Cap à l'Aigle . . . . .	15-1	from Murray Bay (Ck. Que.)	G. N. W. office.
Ste. Fidèle . . . . .	"	"	"
Port au Persil . . . . .	"	"	"
St. Siméon . . . . .	"	"	"
Baie des Rochers . . . . .	"	"	"
Rivière aux Canards . . . . .	"	"	"
St. Etienne . . . . .	"	"	"
Tadoussac . . . . .	"	"	"
Bergeronnes . . . . .	"	"	"
Escoumains . . . . .	"	"	"
Baie des Bacons . . . . .	"	"	"
Mille Vaches . . . . .	25-1	"	"
Portneuf Mills . . . . .	"	"	"
Portneuf Light . . . . .	"	"	"
Sault au Cochon . . . . .	"	"	"
Betsiamis (Bersimis) . . . . .	"	"	"

SESSIONAL PAPER No. 19

Manicouagan (Pt. Outardes). 25-1 from Murray Bay (Ck. Que.) G. N. W. office.		
Scougall's Mills.. . . . .	"	"
River Godbout.. . . . .	"	"
Pointe des Monts.. . . . .	"	"
Trinity Bay, West.. . . . .	"	"
Trinity Bay, East.. . . . .	"	"
Caribou Islands.. . . . .	"	"
English Point.. . . . .	"	"
Pentecost.. . . . .	"	"
Ste. Marguerite.. . . . .	"	"
Clark City.. . . . .	"	"
Seven Islands.. . . . .	"	"
River Moisie.. . . . .	"	"
Little River.. . . . .	"	"
Sheldrake.. . . . .	"	"
Thunder River.. . . . .	"	"
Magpie.. . . . .	"	"
St. John River.. . . . .	"	"
Long Point.. . . . .	"	"
Mingan.. . . . .	"	"
Point Esquimaux.. . . . .	"	"
Betchouanes.. . . . .	"	"
Piastre Bay.. . . . .	"	"
Watichou.. . . . .	"	"
Aguanus.. . . . .	"	"
Natashquan.. . . . .	"	"
Kegaska.. . . . .	"	"
Masquaro.. . . . .	"	"
Big Romaine.. . . . .	"	"
Wolfe Bay.. . . . .	"	"
Pointe du Maurier.. . . . .	"	"
Harrington.. . . . .	"	"
Whale Head.. . . . .	"	"
Baie des Moutons.. . . . .	"	"
Bay de Ha.. . . . .	"	"
St. Augustin.. . . . .	"	"
Coxipi.. . . . .	"	"
Rockey Bay.. . . . .	"	"
St. Paul River.. . . . .	"	"
Brador Bay.. . . . .	"	"
Bonne Espérance (St. Paul's River).. . . . .	"	"
Forteau Bay.. . . . .	"	"
Pointe Abouir.. . . . .	"	"
Red Bay.. . . . .	"	"
Chateau Bay.. . . . .	"	"
Belle Isle.. . . . . 50-2	"	"
Anticosti Id. via Long Point.	"	"

ONTARIO.

*Line from Leamington to Pelee Island (Telephone Circuit).—Local rates between Leamington and Point Pelee 15-1; mainland and Island offices 25-1; offices on the Island 15-1 (8 offices).*

Gun Club House, mainland...15-1 (thro' business) from Leamington, G. N. W.  
 Pointe Pelee, mainland.. . . . " " "

4-5 EDWARD VII., A. 1905

Leamington Dock. . . . .	15-1 (thro' business) from	Leamington, G. N. W.
North Pt. Lt. H'se, Pelee Island	"	"
North Dock, Pelee Island. . .	"	"
McIntyre's Corners. . . . .	"	"
West Dock, Pelee Island. . . .	"	"
South Dock. . . . .	"	"

## NORTH-WEST TERRITORIES.

*Line from Qu'Appelle (C.P.R. Sta.) to Edmonton, Alberta—Local rates, 15-1, 25-2, 50-3, for distances 10 to 600 miles (13 offices.)*

Fort Qu'Appelle. . . . .	25-2 Qu'Appelle or Saskatoon.
Touchwood. . . . .	" "
Saskatoon. . . . .	" "
Saskatoon (Ts. office C.P.R. Tel.).	" "
Henrietta. . . . .	" "
Battleford. . . . .	" "
Bressaylor. . . . .	25-2 Saskatoon ; 50-3 Qu'Appelle or Edmonton.
Onion Lake. . . . .	" "
Moose. . . . .	" "
St. Paul de Métis. . . . .	50-3 Saskatoon, Qu'Appelle or Edmonton.
Saddle Lake. . . . .	" "
Victoria. . . . .	25-2 Edmonton ; 50-3 Qu'Appelle or Saskatoon.
Star. . . . .	" "
Fort Saskatchewan. . . . .	" "
Edmonton (Transfer office C. P. R. Tel.). . . . .	" "

*Line from Moosajaw (C. P. Stn.) to Wood Mountain—Local rates 25-2 (1 office).*  
Wood Mountain. . . . . 25-2 from Moosejaw.

## BRITISH COLUMBIA.

*Line from Victoria to Cape Beale—Local rate 50-3 (6 offices).*

Sooke. . . . .	50-3 from Victoria C. P. R. Tel. office.
Otter Point. . . . .	" "
Jordan River. . . . .	" "
Port San Juan. . . . .	" "
Carmanah Lt. House. . . . .	" "
Cape Beale. . . . .	" "

*Line from Nanaimo to Comox—Local rate 25-2 (9 offices).*

Wellington, (C.P.R. & E. & N. Ry.). . . . .	25-2 from Nanaimo.
Parksville. . . . .	" or Wellington.
Fanny Bay. . . . .	" "
Cumberland. . . . .	" "
Union Bay. . . . .	" "
Union Mines. . . . .	" "
Courtney. . . . .	" "
Comox. . . . .	" "
Alberni (branch). . . . .	" "

*Line from Alberni to Cape Beale—Local rate 50-3.*

Between offices on the Victoria-Cape Beale line and the Nanaimo-Comox line, via Alberni, 50-3.

## SESSIONAL PAPER No. 19

*Line from Golden to Windermere—Local rate 25-2 (3 offices).*

1. Athalmer . . . . . 25-2 from Golden (C. P. Ry.)
2. Wilmer . . . . . “
3. Windermere\* . . . . . “

*Line from Kamloops to Lower Nicola (Telephone) (8 offices).*

Connections are leased and lessees allowed commission on messages of non-subscribers. Tariff 25-2 local and from Kamloops, and for conversations 25 cents for five minutes, half that rate for each additional five minutes or fraction thereof.

*Yukon System.*

Tariff rates for the Yukon lines are given in the Table of Staff, &c., in the foregoing pages.

SUMMARY.

Offices on government lines, as listed . . . . .	312
Offices at transfer points with connecting lines . . . . .	15
Total number embraced by the service . . . . .	327

The following report from Mr. J. Y. Rochester, acting superintendent of the Yukon system, at Vancouver, is elsewhere referred to in the foregoing pages.

VANCOUVER, B.C., November 1, 1904.

SIR,—I respectfully submit to you herewith my report of the working of the Yukon telegraph system for the past fiscal year, ended June 30, 1904.

The revenue and expenditure for the past fiscal year for the main line and branches is as follows :—

MAIN LINE, ASHCROFT TO NORTHERN BOUNDARY.

Expenditure.		Revenue.		Surplus.	Deficit.
\$	cts.	\$	cts.	\$	cts.
159,679	25	123,757	31		35,921 94
13,531	42 Port Simpson Line . . . . .	1,051	23		12,480 19
977	44 Barkerville . . . . .	1,024	84	47 40	
1,677	58 Horsefly . . . . .	663	11		1,014 47
924	46 Lillooet . . . . .	495	48		428 98
176,790	15	126,991	97	47 40	49,845 58
	Less surplus . . . . .				47 40
	Deficit . . . . .				49,798 18
Expenditure . . . . .					8176,790 15
Revenue . . . . .					126,991 97
Deficit . . . . .					49,798 18

To which must be added expenditure made at Ottawa.

4-5 EDWARD VII., A. 1905

## COMPARATIVE Statement of revenue and expenditure for 1902-03 and 1903-04.

		<i>Revenue.</i>			
1902-1903.....				\$113,621 44	
1803-1904.....				126,991 97	
Increased revenue.....				\$13,370 53	
		<i>Expenditure.</i>			
1902-1903.....				\$242,211 51	
1903-1904.....				176,790 15	
Decreased expenditure.....				\$65,421 36	
		<i>Volume of Business.</i>			
1902-1903—Messages, 41,347.....				\$107,585 36	
" — Press, 603,618.....				6,036 18	
Total.....				\$113,621 54	
1903-1904—Messages, 47,982.....				\$119,238 39	
" — Press, 775,358.....				7,753 58	
Total.....				\$126,991 97	
Increased Messages, 6,635.					
" Press words, 171,740.					
Increase to revenue, \$13,370.55.					
The following gives the increase and decrease for each month of the years :—					
		Decrease.		Increase.	Total.
		\$	cts.	\$	cts.
1903.					
July.....				638	53
August.....			196 26		
September.....			293 14		
October.....				543	66
November.....				1,106	57
December.....				1,115	77
1904.					
January.....				114	10
February.....				346	88
March.....				2,518	05
April.....				594	92
May.....				2,363	43
June.....				4,517	92
			489 40	13,859	93
Less.....				489	40
					13,370 53

<i>Expenditure.</i>	
Salaries.....	\$95,712 54
Provisions and supplies.....	36,200 49
Freight and packing charges, transportation, &c.....	27,451 18
Sundry expenses, rent, fuel, light, board of employees, repairs to trails, &c.....	17,425 94
Total.....	\$176,790 15

<i>Number of Employees.</i>	
Main Line, Ashcroft to Northern Boundary.....	109
Port Simpson and Hazelton Branch.....	12
Horsefly Branch.....	3
Lillooet ".....	2
Barkerville ".....	1
Total.....	127

SESSIONAL PAPER No. 19

The revenue has shown an increase for every month with the exception of a small decrease in August and September; but the prospect of the early completion of the U.S. military cable from Seattle to Skagway and Valdez will seriously affect the receipts for the future, as all business to and from the U.S. military lines in Alaska will be practically diverted to the cable lines.

The volume of business has very materially increased during the past year. The revenue returns show an increase of 6,635 messages, and 171,740 words of press over 1902-03.

Local business also has improved somewhat, and I am of the opinion that this will be materially increased on both main and branch lines, more particularly on that part of the line between Quesnelle and Hazelton, as quite a number of settlers have taken up homesteads along the line in the Nechaco and Bulkley valleys, and as there is no mail communication the different stations in that part of the country should receive considerable business.

The expenditure has been kept down to as low a point as possible consistent with an efficient service. Prompt returns of all expenditures on the different divisions are made by the district superintendent, and all the salaries and accounts are settled monthly. The expenditure for the main line and branches are given separately, showing a deficit on the main line :—

Main line . . . . .	\$35,921 94
Port Simpson and Hazelton branch . . . . .	12,480 19
Horsefly branch . . . . .	1,014 47
Lillooet branch . . . . .	428 98
	<hr/>
	\$49,845 58

to which must be added the expenditure made through the department at Ottawa, of which I have no record.

The Barkerville branch shows a small balance on the right side of \$47.40.

The service on the line has been fairly well maintained considering the length of the line and the nature of the country through which it passes, and interruptions have not been so frequent nor of so long duration as in the previous year.

More refuge cabins have been built between stations and fitted with stoves, blankets and provisions, for the use of the linemen when out. Packing blankets and provisions and the length of time taken to make up a camp for the night was the cause of great delay in restoring communication.

The main line has been thoroughly gone over and put in good repair.

The Port Simpson and Hazelton branch has also received a thorough overhauling, and the service, since April last, has been fairly good compared with the previous year, and I fully expect that communication will be kept up with very little interruption during the winter months.

The Barkerville and Lillooet branches are in rather a bad condition. A great many poles require to be renewed and a general clearing of the line will be necessary. The appropriation voted last session is now being expended, and although not sufficient to do all the repairs that are necessary, will put the line in fairly good shape.

I made a trip of inspection to Hazelton, Port Simpson, Aberdeen and Telegraph Creek last summer, and found everything in connection with these offices in good condition.

All intervening stations on the line between Quesnelle and Atlin have been visited by the different line foremen, who have reported everything kept in a neat and clean condition, and provisions properly taken care of.

I regret to report the death of F. B. Gorrell, operator at Pike River, and W. S. Lanktree, operator at Yukon Crossing.

The former accidentally shot himself while out south of Pike River on December 30 last. Medical assistance was obtained as speedily as possible from Atlin, where he

4-5 EDWARD VII., A. 1905

was taken; but succumbed to his injuries shortly after reaching Atlin. His remains were sent east to Westport, Ont., at the request of his relatives.

Operator Lanktree was drowned in Rink rapids on June 7, by the upsetting of his canoe while out repairing the line. His body was recovered on June 11, and interment was made at White Horse.

All funeral expenses in connection with these accidents were paid by the department.

The services of several of the employees were dispensed with for neglect of duty, but, with the exception of these all of the employees have given good satisfaction and shown an active interest in the performance of their several duties.

I have the honour to be, sir,

Your obedient servant,

(Sgd)

J. Y. ROCHESTER,

*Acting Superintendent.*

A Gobeil, Esq.,

Deputy Minister of Public Works,

Ottawa.

PART VI

REPORT OF THE COLLECTOR OF REVENUE

DEPARTMENT OF PUBLIC WORKS.

1903-1904.





## COLLECTION OF REVENUE

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, November 14, 1904.

F. GELINAS, Esq.,  
Secretary, Department of Public Works,  
Ottawa.

SIR,—I have the honour of submitting my report for the year ended June 30, 1904.

I have examined the books and accounts of the officers under my control (excepting these of the Dock Master at Esquimalt), and it is my pleasing duty to state that in all cases the rules laid down for their guidance by the department have been carefully observed by these officers, who have faithfully accounted for all revenues collected by them.

During the past fiscal year the revenue accrued from Public Works shows a decrease of \$20,506.73, being \$107,950.90 while for the preceding year it amounted to \$128,457.63.

The collections also show a decrease of \$20,872.81 being \$107,115.32, while in the preceding year they amounted to \$127,988.13.

The revenue accrued from slides and booms was \$71,331.20 or \$6,661.28 less than in 1902-03. The collections were \$70,495.62 or \$7,027.36 less than the previous year. The outstanding uncollected dues on June 30 last, increased by \$835.58.

The graving docks yielded \$32,444.56 or \$13,432.52 less than in 1902-03.

From the locks, the receipts were only \$140.64 all of which was refunded under Order in Council of July 28, 1903.

From rents, the revenue was \$4,034.50 being \$84.49 more than in 1902-03.

Having dealt with the revenue in a general way, I beg to submit the particulars in detail relating to the several services under their respective heads.

### SLIDES AND BOOMS.

#### OTTAWA DISTRICT.

The tolls charged up amounted to \$41,756.85, or \$4,580.53 less than in 1902-3.

The number of logs that passed through the works was 4,314,524, or 249,917 more than the preceding year.

Of square timber there were 15,092 pieces against 18,442 in 1902-03.

All the revenue accrued in this district during the year just closed was collected, excepting \$637.37 which it is claimed should be written off.

Of the dues accrued since July 1, 1889, when this department took over the collection, there remains uncollected \$10,473.67, full particulars of which will be found in statement No. 2, herewith.

Of the dues accrued prior to July 1, 1889, there remains uncollected \$56,805.65, all of which should be written off. See statements Nos. 1 and 3, herewith for particulars.

The accounts for the Ottawa District stand thus :—

Dues accrued during the year 1903-04.. . . .	\$41,756 85
Collected.. . . .	\$41,119 48
Outstanding June 30, 1904.. . . .	637 37
	<hr/> \$41,756 85

4-5 EDWARD VII., A. 1905

The amount outstanding in the Ottawa district, year by year being as follows:—

Dues accrued prior to the collection being transferred to this department. . . . .	\$56,805 65
Dues of 1889-90. . . . .	\$6,903 05
“ 1890-91. . . . .	28 42
“ 1892-93. . . . .	379 80
“ 1896-97. . . . .	196 71
“ 1900-01. . . . .	2,328 32
“ 1903-04. . . . .	637 37
	————— \$10,473 67

I would again ask particular attention to the fact that since this department assumed the collection of these dues, of the amount accrued, viz., \$795,917.44, all but \$28.42, absolutely owing to the department has been collected; the remainder above shown and aggregating \$10,473.67, being composed of Chaudière boonage, \$6,903.05, which should have been written off long ago, and the balance being covered by counter claims, which, if my information be correct with regard to them, ought to be allowed, excepting perhaps the item of 1903-04.

Herewith are statements in detail:—

No. 1.—Statement of amounts outstanding prior to July 1, 1889, uncollected September 30, 1904.

No. 2.—Statement of dues accrued at Ottawa since July 1, 1889, uncollected September 30, 1904.

No. 3.—Statement of amounts accrued at Quebec prior to July 1, 1889, uncollected September 30, 1904.

No. 4.—Statement of the number of pieces of square timber, saw logs, &c., which passed through the Ottawa works during the year ended June 30, 1904.

No. 5.—Statement of dues accrued from each of the slides and works in the Ottawa district during the year ended June 30, 1904.

In the face of facts adduced it is well to show where the decrease in the revenue has occurred.

There were decreases as follows, viz.: Main Ottawa, \$456.05; Petewawa, \$537.07; Madawaska, \$1,507.31; Coulonge, \$2,325.88 and Gatineau, \$2,266.45, while the Cheneaux boom shows an increase of \$283.44, Dumoine, \$726.61 and Black river, \$1,502.18, leaving a net decrease on the whole of \$4,580.53.

I would ask attention to the revenue from the Madawaska, formerly one of our largest revenue producing streams; during the year just closed, it only yielded \$1,451.58, the falling off being attributed to the exhaustion of the pine on most of the limits, while of that which remains, nearly all of the logs are either sawed at Whitney or brought to Ottawa by rail.

The revenue again falls short of the estimated income when the present tariff was imposed, but this can, I think, be largely attributed to the great number of small logs, formerly left in the woods, being now brought down and utilized, and I may say here that the constantly decreasing diameter of the logs brought down accounts for the fact that though the number may appear larger, yet the revenue being based on the board measure contents, is smaller.

Before closing these remarks on the Ottawa district, I would again respectfully urge the desirability of having the question of the arrears appearing as uncollected, brought before the Public Accounts Committee, not only those of the Ottawa district, but those from the other districts as well, so as to obtain the authority of parliament to write them off, as they are a source of friction between the government and the individuals interested, frequently preventing settlement of accounts justly due individuals, while the amounts standing against them should have been written off long ago.

## SESSIONAL PAPER No. 19

## ST. MAURICE DISTRICT.

The revenue from this district was \$27,321.67, being \$1,910.66 less than the preceding year.

The number of pieces of timber of all kinds which passed through the works was 2,682,250.

All the dues of 1903-04, were collected.

Since I took charge of this district, in 1892, all the revenue accrued has been collected.

The amount outstanding remains the same as at the close of the preceding year, viz.: June 30, 1903, namely, \$14,481.49, all of which should be written off for reasons assigned in statement No. 6, herewith.

The spring of 1903, was a most remarkable one for this district, there being no rains until the beginning of June, in consequence, the water in the St. Maurice was very low, and up to that time it seemed as if the bulk of the logs would not come down for want of water, however, when the rains set in, the water rose satisfactorily and kept at a fair level for the remainder of the summer, thus though most of the logs came out, yet a great many remained in the tributaries and along the main river, which came down in spring of 1904, it is worthy of notice here that though the quantity of logs left along the river to come with the ice in the spring far surpassed that known for many years, yet the number which was lost through going out into the St. Lawrence was so small as to be hardly worth mention.

During the past summer an alligator warping tug was purchased and the utility of the machine established, for without it, it is doubtful if anything like the large quantity of logs handled at Grand Mère, could have been gotten below that point, and if not presuming too much, I would, in the interest of the department, urge the advisability of having one of these tugs ready at Three Rivers next spring before the ice breaks up, for, as a few hours has made it impossible to finish stretching the booms there, with this utensil, there is no saying exactly how much time would be saved compared with the time required to handle these heavy booms by hand as in the past, and much of the risk of the 400,000 logs now in the river being lost by going out into the St. Lawrence obviated.

I trust I may be pardoned, if I again urge in view of the magnitude of the interests involved, the providing in the near future of a means of retaining the waters of the great lakes at the head of the St. Maurice, in the early spring months, and so providing against such disastrous floods as have occurred in the past, whereby the lumbermen suffer great loss of property, but the government also through the works being carried away or damaged, lost heavily, and this even in recent years. With some such a system for retaining the water in the spring, the supply during the dry months of midsummer could be regulated and much of the difficulties experienced in recent years, if not overcome, at least be modified to a great extent, as the forests are being denuded so rapidly, the snow melts more quickly than formerly in the spring, the water so resulting together with the usual spring rains, coming all at once, form a flood that is likely to be greater every year as time goes on.

The department is interested in a very great degree in devising such a system as suggested, having such large sums invested in the works on the St. Maurice, and moreover, if the logs are not prevented from going into the St. Lawrence, not only the lumberman is the loser, but the government is deprived of the revenue which it would otherwise have derived from the timber.

Such a scheme, if my information be correct, would not cost a very large outlay, considering the interests involved, and it would not be unreasonable to expect that not only the lumbermen, but the manufacturers, whose mills are driven by water, would gladly contribute to its cost and maintenance. while the provincial government might be asked to assist.

I may say here, lest any one might be carried away by an exaggerated idea of quantity, when the millions of logs taken out on the St. Maurice are mentioned, the

4-5 EDWARD VII., A. 1905

vast majority of the logs are spruce and a very great portion of them are very small, as they take for making pulp everything down to four inches at the small end, in fact I have seen some as small as two inches ; moreover, as the proportion of this small stuff is constantly increasing, it may be easily understood why, though the number of logs has rapidly increased, the revenue has not increased as it would if the logs were of a larger size, since this small stuff pays a much smaller rate than the logs of 10 inches and upwards in diameter.

I may say in conclusion that every precaution should be taken to handle an unusually large quantity next year, for besides the 400,000 logs in the river now, it is probable that the number of logs to be made this winter will exceed 5,000,000 pieces.

#### NEWCASTLE DISTRICT.

The dues accrued from this district during the year amounted to \$2,252.68, all of which was collected, but \$198.21 due by Gilmour & Co.

The total outstanding uncollected on June 30, 1904, was \$8,323.81, of which \$3,521.19 should be written off in accordance with a judgment in the Exchequer court: the remainder consists of an account in the hands of the Department of Justice for collection and amount due by Gilmour & Co. See statement No. 7 for details.

With regard to this latter, I may say that they are in treaty with another department of the government for the sale of certain properties owned by them, which would be of very great use to the government and settlement of the account with this department is only waiting the decision as to this sale, whether favourable or not.

#### GRAVING DOCKS.

##### ESQUIMALT GRAVING DOCK.

The revenue from this source was \$9,881.35 shown in detail in statement No. 8, herewith, being less than the previous year by \$3,787.65.

Of the 154 days the dock was occupied during the year, it was used by the British navy for 128 days, Canadian government vessels for 4 days, and by the mercantile marine for 22 days.

##### LÉVIS GRAVING DOCK.

The revenue from this work was \$8,315.05 less than for the previous year, being for 1903-04, \$15,573.85. See statement No. 9 herewith.

The dock was occupied for 115 days exclusive of the winter months, during which it was occupied by steamship 'Campana' steamer 'Admiral,' government dredge 'No. 6' and tug 'Storm King.'

##### KINGSTON GRAVING DOCK.

The dock was occupied for only 80½ days exclusive of winter months. The income for the past year was \$6,989.36 or \$1,329.83 less than in 1902-03. See statement No. 10 for details.

#### LOCKS.

By Order in Council of July 28, 1903, the tolls on the locks were abolished for two years, and all tolls collected since the beginning of navigation of 1903, directed to be refunded.

##### RIVIÈRE DU LIÈVRE LOCK.

The tolls collected amounted to \$12.12, which were refunded.

##### RIVIÈRE YAMASKA LOCK.

The receipts from this work were \$98.52 also refunded.

## SESSIONAL PAPER No. 19

## RENTS.

The collections on this account were as follows :—

From old post office building, Victoria, B.C. . . . .	\$3,792 00
“ “ “ St. John, N.B. . . . .	112 50
“ water lot, Port Morien, N.S. . . . .	1 00
“ part Toronto island. . . . .	1 00
“ land in Kingston, Ont. . . . .	1 00
“ part graving dock premises, Kingston, Ont. . . . .	125 00
“ part reserve, Victoria island, Ottawa, Ont. . . . .	2 00
	<hr/>
	\$4,034 50

There are no rents uncollected on claims in my hands.

Thus the total revenue that passed through my hands during the year ended June 30, 1904, may be summarized as follows :—

From slides and booms . . . . .	\$ 70,495 62
Graving docks. . . . .	32,444 56
Locks. . . . .	140 64
Rents. . . . .	4,034 50
	<hr/>
	\$107,115 32

The following comparative table of Public Works revenue accrued 1903-04 and 1902-03, shows at a glance in what accounts the increases and decreases herein referred to occurred :—

	Year. 1903-04.	Year. 1902-03.	Increase. 1903-04.	Decrease. 1903-04.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
SLIDES AND BOOMS.				
Ottawa District . . . . .	41,756 85	46,337 38		4,580 53
St. Maurice District . . . . .	27,321 67	29,232 33		1,910 66
Newcastle District. . . . .	2,252 68	2,422 77		170 09
	<hr/>	<hr/>		<hr/>
	71,331 20	77,992 48		6,661 28
GRAVING DOCKS.				
Esquimalt, B.C. . . . .	9,881 35	13,669 00		3,787 65
Lévis, Que. . . . .	15,573 85	23,888 90		8,315 05
Kingston, Ont. . . . .	6,989 36	8,319 18		1,329 82
	<hr/>	<hr/>		<hr/>
	32,444 56	45,877 08		13,432 52
LOCKS.				
Rivière du Lièvre. . . . .	42 12	279 78		237 66
Rivière Yamaska. . . . .	98 52	358 28		259 76
	<hr/>	<hr/>		<hr/>
	140 64	638 06		497 42
	<hr/>	<hr/>		<hr/>
Rents. . . . .	4,034 50	3,950 01	84 49	

No. 1.—STATEMENT of Slidage and Boomage from the Ottawa Slides and Works, accrued prior to July 1, 1889, Outstanding June 30, 1904, and remaining uncollected on September 30, 1904.

By Whom due.	Bad and Doubtful Debts.	Chaudière Boomage in Suspense.	Other Slide and Boom Dues Disputed.	Total Outstanding on Sept. 30, 1902.	Year to which Dues Belong.	Remarks.
	% cts.	% cts.	% cts.	% cts.		
John & Wm. McLean.....	53 14			53 14	1873.....	Insolvent.
John Rowan.....	342 50			342 50	1872-1873.....	"
Lemieux & Charette.....	21 30			21 30	1873.....	"
Tailleur & Lapierre.....	148 10			148 10	1873-1874.....	"
Mosgrove & McHarry.....	261 42			261 42	1873-1874.....	"
W. C. Wells.....	600 90			600 90	1873-1874.....	"
Dufresne & McTearley.....	528 80			528 80	1874-1875.....	"
Walton Smith.....	171 46			171 46	1874-1875.....	"
A. H. Baldwin.....	3,507 92			3,507 92	1871 to 1874.....	"
Hon. James Skead.....	9,807 65			9,807 65	1861, 1863, 1864, 1869, 1875 to 1878.....	"
Batson & Carrier.....	5,558 70			5,558 70	1875 to 1877.....	"
A. F. A. Knight.....	546 30			546 30	1878.....	"
James Walker.....	11 25			11 25	1877.....	"
R. Campbell & Son.....	1,558 50			1,558 50	1879 to 1881.....	"
James G. Bryson.....	73 50			73 50	1886.....	"
Costello Bros.....	90 62			90 62	1882.....	"
N. E. Cormier.....	428 34			428 34	1888.....	"
James Ynill.....	9 29			9 29	1876.....	"
J. & B. Grier.....	76 84			76 84	1883.....	"
R. & W. Conroy.....	95 42			95 42	1882-1883.....	"
A. & P. White.....	101 00			101 00	1881.....	"
B. Caldwell & Son.....	4 33			4 33	1887.....	"
J. R. Booth.....		9,871 93	398 88	10,270 81	1881 to 1888.....	"
Perley & Pattice.....		8,889 85		8,889 85	1881 to 1888.....	"
The Bronsons & Western Lumber Co.		8,180 79		8,180 79	1881 to 1888.....	"
Pierce & Co.....		462 18		462 18	1888.....	"
G. A. Grier & Co.....		1,060 59		1,060 59	1886-1887.....	"
Estate late Levi Young.....		1,461 20		1,461 20	1881 to 1885.....	"
Wm. Mason.....		413 85		413 85	1881 to 1888.....	"
Gilman & Co.....		406 27		406 27	1884.....	"
John Rochester.....		258 88		258 88	1881 to 1883.....	"

4-5 EDWARD VII., A. 1905

reported in return S-38, for March, 1886.

\$398.88, counter claim for damages by the breaking of  
Coulange Boom.

\*Chaudière boomage. These parties claim that they have  
maintained these works wholly at their own expense  
since 1881.





4-5 EDWARD VII., A. 1905

No. 3.—STATEMENT of Outstanding Slide Dues, Ottawa District, Bonds for which were sent to Quebec for Collection.

Name.	From 1860.		From 1861.		Total.
	\$	cts.	\$	cts.	\$ cts.
Hon. James Skead.. . . . .	245	00	210	00	455 00
James Mair .... .			696	75	696 75
	245	00	906	75	1,151 75

These amounts were uncollected, as the parties claimed damages for loss caused by the Madawaska boom breaking in 1860.

A decision on their claims was not arrived at till August 2, 1869. On the 5th idem Messrs. Skead and Mair were notified that the department could not recognize their claim.

To the best of my knowledge, this decision was never communicated to the collector of slide dues, consequently these accounts remained in abeyance.

Since then both parties died, and I believe both were insolvent at the time of their death.

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.

No. 4.—STATEMENT of the number of pieces of Square Timber, Saw-logs, &c., that passed through the Government Slide and Works on the River Ottawa and its tributaries during the fiscal year ended June 30, 1904.

	Pieces.
Square timber.. . . . .	15,092
Saw-logs.. . . . .	4,314,524
Boom and dimension timber.. . . . .	151,598
Cedars.. . . . .	141,362
Railroad ties.. . . . .	466,124
Fence posts.. . . . .	139,077
Total.. . . . .	5,227,777

Also 13,672 31-100 cords pulpwood.  
Revenue accrued on the above was \$41,756.85.

EDWARD T. SMITH,  
*Collector of Public Works Revenue.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.

## SESSIONAL PAPER No. 19

No. 5.—STATEMENT showing the dues accrued on the under-mentioned works on the River Ottawa and its tributaries during the fiscal year ended June 30, 1904 :—

River or Other Improvement.	Amount.
Main Ottawa.....	\$4,747 85
Cheneaux Boom.....	7,475 01
River Petewawa.....	7,831 31
River Madawaska.....	1,451 58
River Coulonge.....	6,328 08
River Dumoine.....	1,043 48
Black River.....	6,390 46
Gatineau.....	6,489 08
	<hr/>
	\$41,756 85

Amounting to \$41,756.85.

EDWARD T. SMITH,

*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.

No. 6.—STATEMENT of Slide and Boom Dues from the St. Maurice Slides and Works outstanding on June 30, 1904, and remaining uncollected on September 30, 1904.

Name.	Year to which Dues belong.	Amount.	Total.	Remarks.
		\$ cts.	\$ cts.	
George Baptist, Son & Co..	1878	469 95		
" ..	1879	2,110 62		
" ..	1880	1,696 18		
" ..	1881	293 69		
" ..	1882	165 80		
" ..	1884	118 50		
" ..	1888	4 28		
			4,859 02	
Ross, Ritchie & Co .....	1878	3,072 84		
" ..	1883	2,173 68		
" ..	1884	28 96		
" ..	1886	1 62		
" ..	1887	4 38		
			5,281 48	
Alex. Baptist.....	1879		2,116 96	
Wm. Ritchie & Co.....	1888	779 24		
" ..	1889	332 11		
			1,111 35	
Ritchie Bros.....	1886	413 43		
" ..	1887	634 71		
			1,048 14	
G. B. Hall .....	1890		49 34	Insolvent.
T. E. Normand.....	1890		42 28	Claims that this balance is an overcharge.
Trefflé Biron .....	1891		0 92	Would cost more to collect than it is worth.
			14,481 49	

To make this balance agree with the Public Accounts, there should be deducted \$7.93 over credited Alex. Baptist, and \$217.17 added thereto, being \$190.40 paid July 23, 1884, and \$26.77 over charged in error to Wm. Little, not in any of the collector's returns, which will give balance due September 30, 1894, of \$14,690.73.

EDWARD T. SMITH,

*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.

4-5 EDWARD VII., A. 1905

No. 7—STATEMENT of Slide and Boom Dues accrued from the Newcastle and Trent River Works, outstanding on June 30, 1904, and remaining uncollected September 30, 1904.

Name.	Year to which Dues belong.	Amounts disputed.	Ordinary Dues.	Total.	Remarks.
		\$ cts.	\$ cts.	\$ cts.	
Irwin & Boyd.....	1881 .....	59 79		59 79	Insolvent.
Thomson & McArthur.	1889 .....	52 78		52 78	
Jabez Thurston. ....	1882 .....	12 50		12 50	
McDougall & Ludgate.	1879 .....	65 07		65 07	
Bigelow & Trounce....	1882 to 1885.....	216 21		216 21	
R. G. Strickland .....	1882, '83, '85, '86, and '87.	215 08		215 08	Dead and estate distributed.
Est. late Geo. Hilliard.	1877 to 1883 and 1886....	354 15		354 15	
T. G. Hazlett.....	1881, '82, '84 to '89.....	885 25		885 25	According to judgment in Exchequer Court, <i>re</i> Boyd <i>vs.</i> Smith, these cannot be collected.
J. M. Irwin .....	1882, '83, '85 to '88. ....	698 45		698 45	
D. Uilyot.....	1881 to 1887.....	547 68		547 68	
Green & Ellis.....	1881 to '83, '85, '88 and '89.	157 01		157 01	
A. W. Parkin.....	1884, '85, '88, '90 and '91..	65 92		65 92	
The Dickson Estate....	1883.....	137 50		137 50	Sent to Dept. of Justice for collection.
Alfred McDonald.....	1888.....	40 80		40 80	
John Parkin.....	1889.....	13 00		13 00	
Gilmour & Co.....	1893, '94, '95, 1900, '01, '02, '03.....		4,766 92	4,766 92	
John Dovey .....	1894, '95, '96 .....		35 70	35 70	
		3,521 19	4,802 62	8,323 81	

EDWARD T. SMITH.

*Collector of Public Works Revenue.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.

## SESSIONAL PAPER No. 19

## No. 8.—THE DRY DOCK AT ESQUIMALT, B.C.

STATEMENT of Dues and other Charges collected during the Year ended June 30, 1904.

Name of Vessel Docked.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges.	Total.
		From	To			
		1903.	1903.	\$ cts.	\$ cts.	\$ cts.
Str. Robert Adamson .....	2,992	July 6.	July 14	1,160 00	18 60	1,118 60
Ship Columbia. ....	2,577	" 15.	" 15	400 00	1 80	401 80
		Shortage in May. ....		0 05		0 05
S.S. Elba .....	4,036	Oct. 5.	Oct. 6.	400 00	1 80	401 80
H.M.S. Shearwater.....	980	" 26.	" 28.	127 44		127 44
H.M.S. Flora .....	4,360	Nov. 11.	Nov. 16.	271 63		271 63
H.M.S. Grafton .....	7,500	" 25.	Dec. 4.	453 82		453 82
S.S. Moana .....	3,915	Dec. 4.	" 13.			
		Less 3 lay days on				
		3,950 tons.....		995 00	70 29	1,065 29
		Overpaid.....		0 01		0 01
		1904.				
H.M.S. Flora .....	4,360	Dec. 14.	Mar. 24.	3,759 35		3,759 35
		1904.				
Ship Forteviot .....	3,145	Mar. 30.	" 31.	563 00	3 00	506 00
S.S. Inverness .....	3,734	Apl. 2.	Apl. 3.	400 00	1 80	401 80
H.M.S. Shearwater.....	980	" 7.	" 14.	298 25		298 25
S.S. Garonne.....	3,876	May 7.	May 10	636 60	9 00	645 00
H.M.S. Flora .....		Short paid in March.		34 25		34 25
H.M.S. Shearwater. ....		" April..		2 66		2 66
Str. Quadra .....	573	May 16.	May 20.	390 00	3 60	393 60
	43,028			9,771 46	109 89	9,881 35

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.

EDWARD T. SMITH,  
*Collector of Public Works Revenue.*

4-5 EDWARD VII., A. 1905

## No. 9.—THE DRY DOCK AT LÉVIS, QUE.

STATEMENT of Dues and other Charges collected during the Year ended June 30, 1904.

Name of Vessel Docked.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges.	Total.
		From	To			
		1903.	1903.	\$ cts.	\$ cts.	\$ cts.
S.S. Norwegian.....	3,523	Entry fee.	July 15..	200 00	.....	200 00
"		July 15..	July 24..	1,284 14	.....	1,284 14
S.S. Fridtjoff Nansen.....	3,275	Entry fee.	July 24..	200 00	.....	200 00
"		July 24..	July 30..	893 00	2 00	895 00
Bark Sardhana.....	1,146	Entry fee.	.....	200 00	.....	200 00
"		Aug. 1..	Aug. 29..	1,593 96	.....	1,593 96
S.S. Manchester Trader.....	3,318	Entry fee.	.....	200 00	.....	200 00
"		Aug. 31..	Sept. 19..	2,410 84	2,440 00	4,850 84
Bark Sardhana.....		Entry fee.	.....	200 00	.....	200 00
"	1,146	Sept. 20..	Sept. 21..	201 57	.....	201 57
S.S. Bergenhaus.....		Entry fee.	.....	200 00	.....	200 00
"	3,606	Sept. 25..	Oct. 10..	2,031 80	.....	2,031 80
"		.....	Over paid.	0 04	.....	0 04
S.S. Campana.....	1,697	Entry fee.	.....	200 00	.....	200 00
"		Wintering	.....	800 00	4 00	804 00
Str. Admiral.....		Entry fee.	.....	200 00	.....	200 00
"		Wintering	.....	200 00	.....	200 00
Steam Barge Orion.....	846	May 3..	May 9..	553 80	1 00	554 80
Dredge International.....	470	Oct. 17..	Oct. 27..	535 00	.....	535 00
			1904.			
Tug Storm King and Dredge No. 6.....		Nov. 26..	April 26..	.....	.....	.....
		.....	Wintering	400 00	.....	400 00
			1904.			
Dredge International.....	470	May 14..	May 18..	394 00	.....	394 00
S.S. Gauss.....	650	June 20..	Entry fee.	200 00	.....	200 00
CASUAL RBVENUE.						
For old pipes sold to C. F. Langlois.....			\$28 70	.....	.....	28 70
	20,147		\$28 70	13,098 15	2,447 00	15,573 85

EDWARD T. SMITH,

*Collector of Public Works Revenue.*DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.

## SESSIONAL PAPER No. 19

## No. 10.—THE DRY DOCK AT KINGSTON, ONT.

STATEMENT of Dues and other Charges collected during the Year ended June 30, 1904.

Name of Vessel Docked.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges.	Total.
		From	To			
		1903.	1903.	\$ cts.	\$ cts.	\$ cts.
Str. D. D. Calvin .....	750	June 30.	July 2.	188 00		188 00
" Orion .....	846	July 8.	" 17.	549 14	5 00	554 14
Barge Muskoka .....	481	" 23.	" 24.	96 20		96 20
Str. Rideau Queen .....	350	" 25.	" 26.	70 00		70 00
" Myles .....	1,198	" 26.	" 27.	169 80		169 80
Barge Star .....	321	Aug. 1.	Aug. 1.	64 20	5 00	69 20
Str. Walcondah .....	1,747	" 9.	" 10.	224 70		224 70
Barge Acadia .....	374	" 13.	" 14.	74 80		74 80
Tug Geo. D. Seymour .....	76	" 19.	" 19.	20 00		20 00
Govt. tug Delsie .....	45	July 3.	July 22.	170 00		170 00
Str. Erin .....	1,237	Aug. 31.	Sept. 11.	1,050 10	18 00	1,068 10
Tug Bronson .....	137	Sept. 11.	" 13.	47 40		47 40
Barge Minnedosa .....	1,041	" 30.	Oct. 1.	154 10		154 10
Tug Mary P. Hall .....	96	Oct. 1.	" 1.	20 00	5 00	25 00
Str. Bothnia .....	833	" 9.	" 10.	162 46		162 46
" Hecla .....	1,110	" 10.	" 13.	316 40	3 00	319 40
" Orion .....	846	" 14.	" 17.	253 04		253 04
" Avon .....	1,417	" 19.	" 22.	390 08		390 08
" J. C. Howard .....	1,244	" 28.	" 31.	359 06	5 00	364 06
" Chicora .....	930	Nov. 2.	Nov. 3.	175 55		175 55
Tug Bronson .....	137	" 3.	" 4.	27 40	3 00	30 40
Barge Augustus .....	802	Dec. 3.	Dec. 4.	130 20	3 00	133 20
" Kildonan .....	523	" 5.	" 6.	102 30	3 00	105 30
Str. Chicora .....		Entry fee.		100 00		100 00
" .....	930	Dec. 17.	Mar. 19.	840 50	15 00	855 50
Str. D. D. Calvin .....	750	April 21.	April 22.	151 25		151 25
Barge Ceylon .....	908	" 25.	" 27.	172 58		172 58
" Augustus .....	802	" 29.	" 30.	151 20		151 20
" Hector .....	539	May 6.	May 7.	103 90		103 90
Str. Bothnia .....	833	" 12.	" 12.	154 30		154 30
Tug H. F. Bronson .....	137	" 25.	" 26.	27 40		27 40
Str. Chicora .....					30 00	30 00
Tug Jessie Hall .....	56	May 30.	May 31.	20 00		20 00
" Emerson .....	276	June 7.	June 7.	55 20		55 20
Ship Turbinia .....	1,064	" 18.	" 19.	156 40		156 40
Str. St. Lawrence .....					10 00	10 00
Govt. dredge Sir Richard, tug and 2 scows .....	250	April 30.	May 5.	130 50	6 20	136 70
	23,086			6,878 16	111 20	6,989 36

EDWARD T. SMITH,  
Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, September 30, 1904.



PART VII

MISCELLANEOUS

ACTS OF PARLIAMENT, PASSED AT SESSION OF 1904, HAVING REFERENCE TO THIS DEPARTMENT.

CONTRACTS LET BY THE DEPARTMENT.

PROPERTY PURCHASED OR SOLD.

PROPERTY, LEASED TO OR BY THE DEPARTMENT.

CURATOR'S REPORT, NATIONAL ART GALLERY.

NAMES OF CHIEF OFFICERS OF THE DEPARTMENT.

NAMES OF OFFICIALS EMPLOYED ON SLIDES AND BOOMS.

NAMES OF PERSONS EMPLOYED ON GRAVING DOCKS.

NAMES OF ENGINEERS, FIREMEN AND CARETAKERS OF PUBLIC BUILDINGS.

AND THE OFFICIAL CORRESPONDENCE OF THE DEPARTMENT

FOR THE

FISCAL YEAR ENDED JUNE 30, 1904.





DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, December 10, 1904.

FRED GÉLINAS, Esq.,  
Secretary of the Department of Public Works,  
Ottawa.

SIR,—I have the honour to send you herewith the following statements concerning the transactions of the department during the last fiscal year with respect to contracts and property, and which are required for insertion in the annual report, 1903-04, viz.:—

No. 1.—Statement of contracts let by this department during the fiscal year ended June 30 last.

No. 2.—Statement of property purchased and sold by this department during the same period.

No. 3.—Statement of property leased to and by the said department during the same period ; and

No. 4.—A list of some of the Public Acts of the Parliament of Canada passed at the last session and Orders in Council having reference to the department.

I have the honour to be, sir,

Your obedient servant,

J. A. CHASSE.

*Law Clerk.*



# STATEMENTS

## SHOWING

1ST.—CONTRACTS LET BY THE DEPARTMENT OF PUBLIC WORKS OF CANADA, FROM JUNE 30, 1903 TO JUNE 30, 1904.

2ND.—PROPERTY PURCHASED OR SOLD BY THE DEPARTMENT OF PUBLIC WORKS DURING THE FISCAL YEAR ENDED JUNE 30, 1904.

3RD.—PROPERTY LEASED TO AND BY THE DEPARTMENT OF PUBLIC WORKS DURING THE FISCAL YEAR ENDED JUNE 30, 1904.



## SESSIONAL PAPER No. 19

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.		Names of Contractors.		Date of Contract	Amount.
PUBLIC BUILDINGS—Continued.					\$ cts.
New Brunswick—Concluded.					
Richibucto, Post Office.	Supply of coal....	J. & T. Jardine.....	Sept.	18, 1903	
St. John	"	R. P. & W. F. Starr....	Oct.	21, 1903	53 96
"	Savings Bank	"	"	"	31 38
"	Custom House	"	"	"	38 75
"	Immigrant Building	"	"	"	128 35
"	West, Post Office	Vroom & Arnold.....	"	"	40 50
"	"	"	"	"	752 70
"	Savings Bank	"	"	"	269 66
"	Custom House	"	"	"	1,679 64
"	Immigrant Building	"	"	"	1,178 43
"	Post Office	Minudie Coal Co., Ltd.,	"	"	25 38
"	Savings Bank	"	"	"	21 75
"	Custom House	"	"	"	21 00
St. Stephens, Post Office	"	Purves & Graham.....	Sept.	29, 1903	166 80
Sussex	"	C. N. Short.....	Oct.	12, 1903	428 95
Tracadie, Lazaretto	"	R. R. Call.....	Sept.	4, 1903	876 61
"	Disinfecting apparatus	P. Campbell & Co.....	May	31, 1904	1,315 00
Woodstock, Post Office.	Supply of coal....	Purves & Graham.....	Sept.	29, 1903	279 29
Quebec.					
Acton Vale.	Construction of Post Office bldg.	Joseph Bourque.....	June	28, 1904	10,250 00
Aylmer,	Post Office.	J. G. Butterworth & Co.	Sept.	14, 1903	117 75
Berthierville	"	Lamarche & Boulanger..	"	29, 1903	105 77
Coaticook	"	W. C. Webster & Son....	Aug.	19, 1903	511 53
Drummondville	"	The Pennsylvania Coal Co.	Oct.	2, 1903	160 00
Farnham	"	J. A. Léquin.....	Aug.	20, 1903	56 00
Fraserville	"	Nap. Dion.....	Sept.	15, 1903	278 75
Hochelaga	"	T. F. Moore Co.....	Oct.	2, 1903	168 78
Hull	"	Hull Coal Co.....	Aug.	28, 1903	76 51
Joliette	"	S. Bourgeois.....	"	29, 1903	237 96
Lachine	"	Joseph Allard.....	Oct.	8, 1903	162 00
Laprairie	"	J. B. H. Beauvais.....	Aug.	28, 1903	105 83
L'Assomption	"	J. E. Archambault.....	Sept.	21, 1903	212 50
"	Heating apparatus	Alex. Mackay & Co.....	Oct.	20, 1903	855 00
"	Public Building.	E. Piché.....	Jan.	13, 1904	1,175 00
Montreal, Post Office.	Rep's to elevators	The Fensom Elevator			
"	Ex'g Warehouse.	Co., Ltd.....	"	23, 1904	5,700 00
"	Six freight elevators	"	Mar.	28, 1904	23,000 00
"	Supply of coal....	T. F. Moore Co.....	Oct.	2, 1903	2,523 01
"	Custom House	L. Cohen & Son.....	"	"	750 82
"	Post Office	Wilson Frères.....	"	"	877 50
"	Revenue Building	"	"	"	250 05
Quebec, Cullers' Office	"	Joseph Gingras.....	Nov.	9, 1903	194 30
"	Marine Agency	"	Oct.	9, 1903	504 64
"	St. Roch Post Office	"	"	"	32 24
Quebec, Custom House.	Supply of coal....	Archer & Co.....	Nov.	9, 1903	111 56
"	Ex'g Warehouse	"	"	9, 1903	1,746 22
"	Immigrant office	"	"	9, 1903	245 00
"	Post Office	"	"	9, 1903	904 24
"	Custom House	M. Madden.....	"	9, 1903	838 82
"	Iron Foundry.	C. Vézina.....	Mar.	7, 1904	545 00
"	Heating apparatus	O. Picard & fils.....	May	16, 1904	1,565 00
Richmond, Post Office.	Supply of coal....	J. D. Smith.....	Oct.	8, 1903	274 89
St. Henri	"	T. F. Moore Co.....	"	2, 1903	202 81
St. Hyacinthe	"	C. Rouleau et fils.....	"	15, 1903	468 02
"	Construction of Inland Revenue building	Paquet & Godbout.....	July	30, 1903	21,089 00
"	Public Bldg. Additional excavation.	"	Sept.	2, 1903	654 00
"	Inland Revenue Bldg. Heating apparatus.	Pierre Therrien.....	June	9, 1904	1,100 00

4-5 EDWARD VII., A. 1905

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.	Names of Contractors.	Date of Contract	Amount.
PUBLIC BUILDINGS— <i>Continued.</i>			8 cts.
<i>Quebec—Concluded.</i>			
St. Jérôme, Post Office. Supply of coal.....	Chas. Godmer.....	Aug. 31, 1903	206 75
St. Johns " " ".....	Jules Audette.....	27, 1903	103 56
Sherbrooke " " ".....	Jean Huot.....	30, 1903	357 30
Sorel " " ".....	Alfred Lavalée.....	Aug. 27, 1903	285 00
" Shipyard " " ".....	The Nova Scotia Steel and Coal Co.....	June 9, 1904	49,800 00
" Post Office. Installation of elect. lights.....	J. Rousseau & Co.....	April 25, 1904	675 00
Thetford Mines. Construction of Post Office.....	Dussault & Pageau.....	Aug. 8, 1903	6,735 75
Three Rivers, Post Office. Supply of coal.....	John Ryan & Son.....	" 20, 1903	187 44
" Custom House " " ".....	" " ".....	" 20, 1903	349 74
Valleyfield, Post Office " " ".....	Besner & Charles.....	Sept. 9, 1903	52 00
" Construction of public building.....	Théodore Bélanger.....	" 14, 1904	32,500 00
Victoriaville, Post Office. Supply of coal.....	F. Beauchesne.....	" 25, 1903	213 52
<i>Ontario.</i>			
Alexandria. Construction of a Post Office building.....	Joseph Bourque.....	Oct. 23, 1903	10,750 00
Almonte, Post Office. Supply of coal.....	Wm. McArthur.....	" 9, 1903	189 00
Amherburg " " ".....	Falls Bros.....	" 6, 1903	274 87
Arnprior " " ".....	J. S. Moir.....	Sept. 14, 1903	237 06
Barrie " " ".....	The Sargeant Co.....	Aug. 25, 1903	245 00
Belleville " " ".....	C. C. Leavens.....	Sept. 15, 1903	663 00
Berlin " " ".....	The Connel Anthracite Mining Co.....	Oct. 5, 1903	229 29
" Public Bldg. Lighting and fixtures.....	The Berlin Electric Co.....	Dec. 16, 1903	534 00
Bowmanville. Construction of Post Office and building.....	Wm. Stuart.....	Nov. 2, 1903	17,768 80
Brampton, Post Office. Supply of coal.....	Peaker & Son.....	Oct. 1, 1903	197 82
Brantford " " ".....	The Brantford Coal Co., Ltd.....	Aug. 28, 1903	178 29
" Drill Hall. Additions and alterations to.....	The Schultz Bros. Co., Ltd.....	June 9, 1904	25,750 00
Brockville, Post Office. Supply of coal.....	Central Canada Coal Co.....	Aug. 21, 1903	399 67
Carleton Place " " ".....	Taylor Bros. & Co.....	Sept. 28, 1903	181 25
Cayuga " " ".....	A. J. Grant.....	Aug. 29, 1903	105 12
Chatham " " ".....	A. R. Crowe.....	" 19, 1903	175 33
Clinton " " ".....	Howland Bros.....	" 29, 1903	125 30
" Public Building. Fittings, plumbing, &c.....	S. S. Cooper.....	" 26, 1903	2,500 00
Cobourg, Post Office. Supply of coal.....	Geo. Plunkett.....	" 19, 1903	215 30
" Construction of Armoury.....	D. S. Booth.....	Feb. 24, 1904	35,550 00
Cornwall, Post Office. Supply of coal.....	A. F. Mulhern & Co.....	Sept. 29, 1903	300 00
Deseronto, Post Office. Supply of coal.....	The Rathbun Co.....	Oct. 5, 1903	520 80
Dundas " " ".....	Chas. Sturrock.....	" 2, 1903	45 65
" Drill Hall. Installation of elect. light.....	H. Auckland.....	Feb. 9, 1903	204 75
Fort William, Post Office. Supply of coal.....	Louis Walsh Coal Co.....	Oct. 19, 1903	221 25
" Pub. Bldg. Heating apparatus.....	Alex. Cameron.....	" 7, 1903	1,705 00
" Post Office and Customs. Fittings.....	Robert Cameron.....	Jan. 9, 1904	3,600 00
Galt, Post Office. Supply of coal.....	Scott & Hogg.....	Oct. 6, 1903	184 60
Gananoque " " ".....	Cowan & Britten.....	" 24, 1903	97 57
" Custom House " " ".....	" " ".....	" 24, 1903	148 37
Goderich, Post Office " " ".....	Wm. Lee.....	Aug. 22, 1903	390 77
Guelph " " ".....	M. F. Cray.....	" 21, 1903	339 91
" Public Building. Works in attic.....	L. C. Wiedeman.....	May 9, 1904	2,860 00
Hamilton, Post Office. Supply of coal.....	The Rogers Coal Co.....	Nov. 5, 1903	1,019 10
Ingersoll " " ".....	J. S. Smith.....	Aug. 31, 1903	341 92
Kingston " " ".....	P. Walsh.....	" 25, 1903	274 00
" Custom House " " ".....	" " ".....	" 25, 1903	184 95
" " Painting, &c.....	Robinson Bros.....	Dec. 29, 1903	520 00
" R.M.C. Gymnasium. Appar. & fittings.....	Ketchum & Co.....	Feb. 18, 1904	6,185 00
" Custom House. Elect. appliances.....	Breck & Halliday.....	Dec. 28, 1903	664 00
Lindsay, Post Office. Supply of coal.....	McLennan & Co.....	Aug. 19, 1903	211 73
" " ".....	R. E. Clisdell.....	Oct. 13, 1903	
" Custom House " " ".....	" " ".....	" 13, 1903	

## SESSIONAL PAPER No. 19

## No. 1.—CONTRACTS let by the Department of Public Works, &amp;c. —Continued.

Works.		Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS—Continued.				\$ cts.
Ontario—Continued.				
Lindsay, Drill Hall.	Heating apparatus.	Elliott Bros.	May 12, 1904	5,450 00
Napanee, Post Office.	Supply of coal	F. F. Van Loven.	Aug. 27, 1903	270 00
Niagara Falls "	"	J. E. Hutchings	Sept. 14, 1903	125 37
" Customs.	Wiring and fixtures	R. F. Carter Electric Co.	March 8, 1904	121 50
Orangeville, Post Office.	Supply of coal	Jas. R. Lathwell.	Oct. 2, 1903	194 75
Orillia "	"	Andrew Tait	Aug. 25, 1903	145 00
Ottawa, Exp. Farm.	"	McCullough & Co.	Sept. 5, 1903	1,075 38
" Public Buildings	"	John Heney & Son	April 22, 1904	44,690 55
" Printing Bureau.	Addition for storage.	Wm. Doran &		
"		R. M. Devlin.	Jan. 13, 1904	9,100 00
" Astronomical Observatory.	Heat'g appar.	Butterworth & Co.	March 3, 1904	2,749 00
"	Structural work to dome	The Warner & Swasey Co.	" 15, 1901	4,740 00
Paris, Post Office.	Supply of coal	Geo. E. Taylor.	Aug. 31, 1903	120 42
Peterborough "	"	The McClellan Co.	Sept. 5, 1903	180 46
Petrolia "	"	R. Jackson & Son.	Oct. 1, 1903	256 75
Pictou "	"	The Rathbun Co.	" 5, 1903	226 00
Port Arthur "	"	Louis Walsh Coal Co.	" 19, 1903	187 00
Port Hope "	"	Wright & Rosevear.	Sept. 28, 1903	232 00
Prescott "	"	James Buckley	Oct. 20, 1903	234 00
" Custom House	"	"	" 20, 1903	409 50
Rat Portage, Post Office	"	Windatt & Co.	Oct. 26, 1903	215 72
St. Catharines "	"	W. H. McCordick	Sept. 19, 1903	255 40
" Construction of Drill Hall	"	M. Sullivan & W. Langdon	June 2, 1904	79,829 00
St. Thomas, Post Office.	Supply of coal	F. H. Ferguson	Oct. 1, 1903	350 60
Sarnia "	"	Geo. Shaw.	Sept. 8, 1903	420 49
" Public Building.	Granolithic walks.	Wm. Ellis	July 24, 1903	527 00
"	Grading, &c.	Simpson & McDonald.	" 24, 1903	300 00
Sault Ste. Marie. Construct.	of Post Office b'd'g	McPhail, McCarty &		
		Wright.	Nov. 23, 1903	54,000 00
Smith's Falls, Post Office.	Supply of coal	A. Mackenzie & Co.	Aug. 27, 1903	175 25
Stratford, "	"	J. E. Hutchings	Sept. 14, 1903	229 90
Strathroy, "	"	Alex. Reed.	Aug. 28, 1903	348 67
Toronto, Custom House.	"	James H. Milnes & Co.	Oct. 5, 1903	465 44
" Examining Warehouse.	"	"	" 5, 1903	555 72
" Post Office.	"	"	" 5, 1903	974 21
" Station 'C.'	"	"	" 5, 1903	
" Revenue Office.	"	"	" 5, 1903	253 55
" Junction, Post Office & Customs.	Vaults,			
	slate roof, &c.	Joy & Needham.	Aug. 4, 1903	1,524 00
" Post Office elevator.	"	The Fenson Elevator Co.,		
		Ltd	Oct. 3, 1903	6,200 00
" fittings.	"	D. Carlyle	" 10, 1903	735 00
" Assistant Rec. General's Office.	New			
	treasury safe.	Toronto Safe Works.	" 10, 1903	2,100 00
" Examining Warehouse.	Addition to			
	(Express Department)	Brown & Love.	May 31, 1904	38,600 00
Trenton, Post Office.	Supply of coal.	J. Funnell	Aug. 31, 1903	172 50
Walkerton, "	"	S. W. Vogan	Sept. 17, 1903	254 00
Windsor, "	"	Robert J. Cleminson	Oct. 16, 1903	467 75
Wingham. Construction of public building.	"	S. S. Cooper	June 24, 1904	15,500 00
Woodstock, Post Office.	Supply of coal.	The MacIntosh Coal Co.	Sept. 5, 1903	261 62
Manitoba.				
Brandon, Post Office.	Supply of coal.	Robert Purdon.	Sept. 16, 1903	892 58
" Exp. Farm.	"	"	" 16, 1903	231 20
"	"	Windatt & Co.	" 21, 1903	149 49
Portage la Prairie, Public Bldg.	Supply of coal.	"	Oct. 26, 1903	449 67
Winnipeg, Post Office.	"	D. E. Adams.	Aug. 31, 1903	2,137 24
" Custom House	"	Harstone Bros.	" 31, 1903	904 40
" Immigt. Office and Shed	"	"	" 31, 1903	1,512 99
" Hospital	"	"	" 31, 1903	
" Indian Office & Crown Timber Office.	"	"	" 31, 1903	
" Exam'g. Warehouse.	Supply of coal.	"	" 31, 1903	533 62



4-5 EDWARD VII., A. 1905

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.	Names of Contractors.	Date of Contract	Amount.
PUBLIC BUILDINGS— <i>Continued.</i>			s cts.
<i>North-west Territories.</i>			
Carnduff, Immigrant Building. Supply of coal.	Fairbairn Bros. ....	Sept. 2, 1903	67 50
Craik. Construction of Immigrant building.	Wm. Hoge & Jas. H. Thomson. ....	Mar. 30, 1904	2,025 00
Davidson " " " " " "	" " " " " "	30, 1904	2,025 00
Edmonton, Dominion Land. Supply of coal.	Milner & Blatchford . . .	Sept. 2, 1903	79 50
Indian Head, Experimental Farm " " "	Geo. Thompson. ....	" 3, 1903	200 00
Lethbridge, Post Office " " "	The Alberta Ry. Coal Co. " "	15, 1903	162 50
Macleod, Custom House " " "	H. A. F. Grady. ....	" 15, 1903	"
" " Court House " " "	" " " " " "	" 15, 1903	37 65
" " " Heating apparatus. ....	Martel & Langelier. ....	Nov. 30, 1903	1,400 00
" " " Fittings. ....	Pat. Navin. ....	Jan. 12, 1904	465 00
Moose Jaw " " Supply of coal. ....	Robert Beard. ....	Oct. 8, 1903	232 20
Moosomin " " " " " "	Windatt & Co. ....	Sept. 21, 1903	306 05
" " " " " " " "	T. H. Bristow. ....	" 1, 1903	151 24
Red Deer. Construction of Court House. ....	Geo. A. Johnson & A. Tait " "	" 7, 1903	12,500 00
" " Dominion Land Office. Supply of coal.	Joseph M. Smith. ....	" 6, 1903	"
Regina. Court House " " "	The Smith & Ferguson Co. Sept. 26, 1903		37 50
" " Post Office and Dominion Land Office. Supply of coal. ....	" " " " " "	" 26, 1903	52 50
" " " " " " " "	" " " " " "	" 26, 1903	37 50
" " Construction of Immigrant building. ....	D. C. McDougall. ....	Mar. 14, 1904	4,500 00
" " Court House. Supply of coal. ....	Whitmore Bros. ....	Sept. 2, 1903	797 50
Regina, Post Office. Supply of coal. ....	Whitmore Bros. ....	Sept. 2, 1903	128 94
" " Dominion Land Office. " " " "	" " " " " "	" 2, 1903	580 00
Wolsley, Court House. " " " "	McGee & Thompson. " "	" 15, 1902	282 75
Yorkton, Immigration Building. " " " "	Wm. Simpson. ....	" 21, 1903	336 86
" " Court House. Heating apparatus. ....	Martel & Langelier. ....	Oct. 21, 1903	1,200 00
<i>British Columbia.</i>			
Kamloops, Drill Hall. Fittings. ....	D. H. Campbell. ....	Aug. 1, 1903	510 00
Nanaimo, Post Office & Building, addition to. ....	Alex. Forrester. ....	May 4, 1904	14,475 00
Nelson, Public Building. Electric light. ....	Kootenay Elec. Supply & Construction Co. ....	Oct. 6, 1903	1,047 00
Rossland, construction of drill shed. ....	Wm. Geo. Gillett. ....	June 13, 1904	17,395 00
HARBOURS AND RIVERS.			
<i>Nova Scotia.</i>			
Big Harbour, construction of wharf approach. ....	Reid & Archibald. ....	Sept. 28, 1904	3,875 00
Big Pond " " " " " "	Hugh McDonald. ....	Jan. 12, 1904	7,720 00
Iona, extension to wharf. ....	K. Sweet & A. W. Girroir. ....	May 20, 1904	10,230 00
L'Ardoise, works to connect breakwater at. ....	Hugh McDonald. ....	Dec. 29, 1903	24,880 00
McKay's Point, Public wharf. ....	Wm. J. Landry. ....	April 30, 1904	5,442 00
Pembroke, Breakwater. ....	J. E. & H. Bigelow. ....	Mar. 23, 1904	7,970 00
Port Hawkesbury, removal of cribwork & ballast on site of wharf. ....	A. W. Girroir. ....	Oct. 26, 1903	2,900 00
Tenecape, Breakwater. ....	Jno. E. & Halle Bigelow. ....	May 17, 1904	8,370 00
Victoria Beach, Pile work pier. ....	Reid & Archibald. ....	June 15, 1904	93,890 00
West Bay, 'The Points.' Pile wharf. ....	Hugh McDonald. ....	Sept. 1, 1903	2,980 00
<i>Prince Edward Island.</i>			
New London, Breakwater. ....	T. P. Cullen. ....	May 3, 1904	5,900 00
<i>New Brunswick.</i>			
Cheticamp Point, construction of wharf. ....	Reid & Archibald. ....	July 16, 1903	13,880 00
Miscou " " " " " "	Jno. Burns & T. P. Charleson. ....	April 27, 1904	13,700 00
Negro Point, supply of stone for breakwater. ....	W. E. Scully. ....	Nov. 17, 1903	2,250 00
Petit Rocher, construction of breakwater. ....	Simon McGregor. ....	May 31, 1904	32,900 00

## SESSIONAL PAPER No. 19

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Concluded.*

Works.	Names of Contractors.	Date of Contract	Amount.
PUBLIC BUILDINGS— <i>Continued.</i>			8 cts.
<i>Quebec.</i>			
Anse aux Gascons, Breakwater.....	Jno. Burns & T. P. Charleson.....	April 27, 1904	15,495 00
Bonaventure, East ".....	" ".....	" 27, 1904	15,690 00
Desjardins, Allouette Island. Wharf.....	Thomas Moran.....	Jan. 8, 1904	9,953 67
Douglastown, Pier.....	Jno. Heney & H. Smith.....	April 28, 1904	17,549 00
Escoumains, Wharf at Les.....	T. Bernier & G. Beaulieu.....	May 7, 1904	11,478 00
Father Point, extension to wharf.....	Jno. Heney & H. Smith.....	" 27, 1904	44,300 00
Laprairie, concrete protection walls.....	Amiot & Lemay.....	Nov. 10, 1903	29,650 00
Lotbinière, roadway from shore to isolated block.....	T. Bernier, & G. Beaulieu.....	May 7, 1904	13,400 00
Maguasha, Wharf.....	T. P. Charleson.....	June 18, 1904	7,500 00
Newport, (Gaspé) additional length to breakwater.....	Jno. J. Lyons & James White.....	Oct. 17, 1903	13,388 00
Paspebiac, Wharf.....	Jno. Burns & T. P. Charleson.....	May 31, 1904	19,695 00
Point aux Trembles, Landing pier.....	Dusseault & Pageau.....	June 28, 1904	33,775 00
Port Daniel, extension to wharf.....	J. J. Lyons & J. White.....	May 30, 1904	21,890 00
Portage du Fort, superstructure of highway bridge.....	The Locomotive & Mach. Co., Ltd.....	Aug. 25, 1903	9,750 00
Quebec, harbour improvements, extension of 500 feet.....	Dusseault & Lemieux.....	May 25, 1904	239,942 87
St. Charles de Caplan, Breakwater.....	J. Burns & T. P. Charleson.....	" 31, 1904	13,700 00
Ste. Famille, (Island of Orleans) addition to wharf.....	P. T. C. Dumais & V. Giroux.....	" 28, 1904	17,664 00
St. Godfroi, Breakwater.....	J. Burns & T. P. Charleson.....	" 31, 1904	19,300 00
Three Rivers, work to ice-breakers.....	Randolph McDonald.....	Aug. 1, 1903	5,400 00
Touladie, building of dams at.....	Fraser & Son.....	Sept. 16, 1903	2,500 00
<i>Ontario.</i>			
Cumberland, Wharf.....	John D. Warwick.....	May 31, 1904	6,275 00
Grand Bend, Wharf and road approach.....	" ".....	March 26, 1904	21,388 00
Honora Bay, Manitoulin Island, Wharf.....	G. Kastner & D. Porter.....	Feb. 22, 1904	7,900 00
Midland, Pile wharf.....	A. A. McDonald.....	Nov. 2, 1903	19,492 00
Pembroke ".....	The W. J. Poupore Co., Ltd.....	Feb. 19, 1904	41,999 00
Port Colborne, timber & concrete cribwork to breakwater.....	M. J. Hogan.....	June 8, 1904	179,000 00
Port Colborne, several works to breakwater.....	" ".....	April 13, 1904	Sch. of rates.
" " ".....	" ".....	March 8, 1904	39,000 00
Sault Ste. Marie, extension to Govt. wharf.....	Jas. Battle.....	April 12, 1904	65,000 00
<i>Vessels, Dredges and Plant.</i>			
Construction of condensing outfit and triple expansion engine for pump dredge <i>W. S. Fielding</i> .....	The Polson Iron Works.....	Sept. 30, 1903	14,915 00
Construction of two boilers for dredge <i>Joseph Israel Tarte</i> .....	John Inglis Co., Ltd.....	Jan. 9, 1904	18,400 00
" " ".....	The Bertram Engine Works Co.....	" 9, 1904	18,400 00
Construction of a square fire box tug boiler for tug <i>Sir Hector</i> .....	The Polson Iron Works.....	March 31, 1904	3,440 00
Supply of electric current for operation of machines, &c., Govt. shipyard at Sorel, P.Q.....	The Sorel Electric Co.....	April 28, 1904	9,000 00
Construction of boiler for dredge <i>St. Louis</i> .....	P. J. Powers & Co.....	June 8, 1904	675 00
<i>Telegraphs.</i>			
Isle aux Coudres, P.Q., maintenance of telephone line.....	Hector Lemieux.....	July 16, 1903	150 00
Supply of 2,280 poles for telegraph line between Bersimis & Godbout, P.Q.....	Jos. & Nérée Tremblay.....	Dec. 23, 1903	per pole 1 90

No. 2. STATEMENT of properties purchased or sold by the Department of Public Works during the Fiscal Year ended June 30, 1901.

4-5 EDWARD VII., A. 1905

Date of Conveyance.	Vendors	Purchasers.	Description of Property.	For what Purpose.	Area.	Price.
1903.						% cts.
July 15	D. A. Macdonald	His Majesty	Part of lot No. 17 N.E. corner of Main and St. Catherine sts., Alexandria, Ont.	Site—Public building.	..... of acre.	3,500 00
"	15 Helen Fryer	"	Portion of lots 13, 14, 15, 16, Solkirk, Man			
Aug. 3	His Majesty	The Locomotive and Machine Co., Montreal, Ltd.				1 00
"		His Majesty				250 00
Sept. 1	Elz. Paquet		Sale of old iron, old Chaudiere Bridge.			
"	1 Kate McNeil & al.		Part of lot Nos. 112 and 110, St. Nicholas, P. Q.	Approach to wharf.		
"			Lot between Main Post Road and shore, East Bay, Big Pond, N.S.	Approach to wharf	9,120 sq. ft.	15 00
"	9 Wm. Snow & al.		Land, Black Cove, Eemm Secum, N.S.	Wharf	..... of acre.	2 00
"	10 Manly Pye & al.		"	"	..... of acre.	8 00
"	29 John Grace & al.		"	"	..... of acre.	1 00
Oct. 6	B. H. Kirkpatrick		Lots 1, 2, Block 8, Clayoquist, B.C.	For telegraph station	1 acre	425 00
"	9 N. Lennell		Part of section 7, Renfrew Dist., B.C.	"	39,662 sq. ft.	125 00
"	9 N. LePage		Lot No. 195, St. Francois, Island of Orleans, P. Q.	Approach to wharf	19,500 sq. ft.	62 50
"	9 S. Enmond		Lot No. 196	"	.....	62 50
"	28 M. Connolly		Lot No. 197	"	20,570 sq. ft.	125,000 00
Nov. 13	Municipality, Anse aux Gascons		Dredging plant, <i>International</i> .			
"	21 Municipality of Port Daniel		Lot No. 435, 1st Range, L'Anse aux Gascons, P. Q.	Wharf	3,040 sq. ft.	1 00
"	21 Annie Spence		Lot No. 190, Port Daniel East, P. Q.	Wharf	..... of acre.	1 00
"	21 Francois Skeue		Township lot 17, Concession 'A', town lot No. 8, Block 'C', Colabour, Ont.	Armoury		2,000 00
"	23 S. LeBrasseur		Land at Shegawake, P. Q.	Wharf and approach.	5,000 sq. ft.	1 00
Dec. 7	John Wofer		Part of lot No. 25, St. Godefroi, P. Q.	Wharf	7,500 sq. ft.	1 00
"	7 Municipality of Nouvelle		Sale of land, Magnushia, P. Q.	Road to wharf	25 x 100 ft.	1 00
"	9 Sam. N. Miller & ux.		Land at Magnushia, P. Q.	Site for wharf	25 x 100 ft.	1 00
"	9 John McLeod & ux.		Land at Middleton, N.S.	Armoury	..... of acre.	550 00
"			Strip of land, North Bay, Ingomish, N.S.	Approach and right of way	21,620 sq. ft.	100 00
"	21 Arthur Garrett		Land at St. Bonaventure East, P. Q.	Wharf	5,000 sq. ft.	1 00
"	22 J. A. Campbell		Land at New Richmond, P. Q.	Approach to wharf	5,000 sq. ft.	1 00
"	22		Part of lot 53, New Richmond, P. Q.	Wharf and approach	5,000 sq. ft.	1 00
"	23 Archd. Stewart & al.		Lands, Township of Nepawa, Appin Place, Ottawa	Public building	400 acres	75,000 00
"	24 Shieves Lumber Co., Ltd.		Land at Campbellton, N.B.	Approach	2,735 ft.	1,000 00

## SESSIONAL PAPER No. 19

"	25 Mary Finnigan and husband	"	Town lot No. 3, Oshawa, Ont.	Public building	2,900 00
"	28 J. & N. Denis	"	Part of lot No. 306, Paspebiac, P.Q.	Wharf	5 00
"	29 M. Douglas	"	Part of lot No. 67, C. Woodstock, Ont.	Public building	1,100 00
"	30 F. Briere	"	Part of lot 53, St. Charles de Caplan, P.Q.	Wharf	1 00
1904.					
Jan.	2 His Majesty	Adelard M. Gauthier	Strip of lands, Three Rivers, P.Q.	Private enterprise	Free grant.
"	29 M. H. Dubois	His Majesty	Lots Nos. 278, 279, 280 and 281, Acton Vale	Public building	2,500 00
"	29 Thos. Gregory & ux.	Thos. Lavson.	Lots Nos. 18, 19, Wingham, Ont.	"	3,000 00
Feb.	30 His Majesty	His Majesty	Sale of boilers, Ottawa.	Private enterprise	1,275 00
"	13 Vincent Fraser & ux.	Land, Port Davis, Big Harbour, N.S.		Wharf	1 00
"	15 His Majesty	Dr. J. D. Mahrt	Land at McKay's Point, N.S.	"	50 00
"	15 H. Hall & ux.	His Majesty	Land at Portland, N.B.	Private enterprise	5,801 00
"	18 N. Shore Power Ry. & Navigation Co.		Land at East River, N.S.	Wharf	300 00
"	29 Athanase Delisle	"	Sale of lands at Seven Islands, P.Q.	Government enterprise	1 00
Feb.	23 M. G. Hardy	His Majesty	Lot No. 876, Pointe aux Trembles, P.Q.	Approach to wharf	300 00
"	24 Peter Devine & al.		Water lot, Grandines, P.Q.	Wharf	2,000 00
Mar.	1 His Majesty	Hamilton Bridge Works Co., Ltd.	Land at Musquash, N.B., (Dipper Harbour)	Right of way	150 00
"	7 Robert G. Barrett	His Majesty	Lands and premises, part of Lot 16, 1st and 2nd Concession, Hamilton, Ont.	Private enterprise	1,500 00
"	9 Bios Baker	"	Lot No. 6, Bridgeburg, Ont.	Public building	770 00
"	22 John McDonald	"	Land, Baker's Point, East Jeddore, N.S.	Site for wharf	1 00
"	28 J. Melnes	"	Land, Point Prim, N.S.	"	350 00
"	29 L. H. Desjardins	"	Land, Breton Cove, N.S., and right of way.	"	120 00
"	30 Robert E. Finn	"	Lot No. 228, Terrebonne, P.Q.	Public building	1,500 00
April	2 His Majesty	Corporation of Acton, P.Q.	Lands, Chezzetcook East, N.S.	Public wharf	50 00
"	2 La Compagnie des bateaux a vapeur de Deschambault & Lottbiniere	"	Lands at Acton, P.Q.	Public building	600 00
"	5 Conrad Denon	His Majesty	Sale of wharf at Deschambault, P.Q.	Public wharf	500 00
"	7 Frs. Vian du St. Mars	"	Bill of sale of tug <i>Grenada</i>	Government purposes	13,000 00
"	8 A. Chevalier	"	Land Lot No. 43, Longueuil, P.Q.	Public building	2,800 00
"	18 Peter Dixon & ux.	"	Lands at St. Louis du Mile East, P.Q.	"	5,400 00
"	18 Alex. Lamsden	"	Land, North Head, Grand Manan, N.B.	Wharf	1 00
"	18 Alex. McIntosh	"	Bill of sale, steam screw <i>Dora</i>	Government purposes	3,000 00
"	19 H. S. Creighton & al.	"	Land at Pleasant Bay, N.S.	"	1 00
"	22 Dr. C. E. Graham	"	Lots Nos. 26, 27, 28, 29, 30, 31, Halifax, N.S.	Deduction hospital	900 00
"	25 H. Paxton Baird	"	Lots la. 2a, 2b, 5th Range, Hull, P.Q.	Government purposes	2,800 00
"	27 Municipality St. Pierre de la Malbaie	"	Land, Woodstock, N.B.	Armsory	6,000 00
"	29 Geo. E. Bouchemin	"	Land, St. Pierre de la Malbaie, P.Q.	Rdwy to Gov. Bkw'r	Free grant.
May	6 Alex. McKay	"	Bill of sale, tug <i>Nile</i>	Government purposes	2,500 00
"		"	Land at Sydney Mines, N.S.	Public building	1,500 00

4-5 EDWARD VII., A. 1905

No. 2.—STATEMENT of properties purchased or sold by the Department of Public Works, &amp;c.—Continued.

Date of Conveyance.	Vendors.	Purchasers.	Description of Property.	For what Purpose.	Area.	Price.
1904.						\$ cts.
May	19 Elz. Savard.	His Majesty.	Park Savard, shore of River St. Charles, Quebec.	Government purposes.		14,000 00
"	27 Corporation of Guelph.	"	Land, City of Guelph, Ont.	Armoury		5,000 00
June	4 Ernest Murré.	"	Land, St. Gédéon les Isles, P.Q.	Appr. to wharf.		1 00
"	4 Wm. Gaudreault.	"	"	"		1 00
"	10 Arch. McKenzie	"	Land, Campbellton, N.B.	For public building.		4,000 00
"	11 Grand Valley Co., Ltd.	"	Strip of land East Point, Grand Valley, P.Q.	Wharf and right of way.	48,000 sq. ft.	1 00
June	21 John N. Lester	"	Land at Burford, Ont.	Armoury	90 x 150 ft.	250 00
"	23 The North Shore Power Ry & Navigation Co.	"	Works and lands at Seven Islands, P.Q.	Government purposes.		55,919 00
"	24 Shives Lumber Co., Ltd.	"	Land at Campbellton, N.B.	Ferry land	7,282 sq. ft.	2,000 00

## SESSIONAL PAPER No. 19

No. 3.—STATEMENT of Properties Leased to and by the Department of Public Works during the Fiscal Year ended June 30, 1904.

Date of Lease.	Lessor.	Lessee.	Property Leased.	For what purpose.	Duration of Lease.	Annual Rental.
1903.						
July 1	G. W. Pacaud.	His Majesty.	Store, St. Catherine St., Montreal	Post office purposes.	5 years	\$ 2,200 per annum.
Aug. 24	His Majesty.	T. Malone & Barrill.	Land, part of lots 497, 408, Cap de la Magdelaine, Q.	Mill purposes	10 "	50 "
Sept. 25	A. L. Pacaud.	His Majesty	Ground floor bldg., St. Catherine St., Montreal.	Post office purposes.	5 "	2,200 "
" 30	The Ottawa Investment Co., Ltd.	"	Stone bldg., s.-w. corner Metcalfe and Queen Sts., Ottawa, Ont.	Government purposes	1 "	1,000 "
Oct. 17	Jas. W. Woods.	"	Stone bldg., Slater St., Ottawa, Ont.	Militia Department.	"	11,040 "
Nov. 2	His Majesty.	Frontenac Cereal Co., Ltd.	Land—Dry dock, Kingston, Ont.	Private enterprise	21 years	250 "
Dec. 22	His Majesty.	Upper Ottawa Improvement Co.	Portion of Govt. reserve, Victoria Island, Ottawa, Ont.	"	10 "	2 "
1904.						
Feb. 20	D. Wood.	His Majesty	Upper floor of warehouse, Tendon, Man.	Immigrant purposes	8 months	15 per month.
Mar. 14	R. Karnagel.	"	Building, Didsbury, N.W.T.	"	6 "	12 "
" 22	C. T. Daykin.	"	Building, Lacombe, N.W.T.	"	9 "	13 "
April 1	E. A. Bush.	"	Upper floor bldg., Leduc, N.W.T.	"	8 "	10 "
" 15	Jas. W. Woods.	"	Building on Queen St., Ottawa.	Railway Commission	5 years	5,300 per annum.
June 10	Municipality of Ste. Cune- gonde.	"	Ground floor of Municipal Bldg., Ste. Cunegonde, Montreal, Q.	Post office	21 "	1,750 "

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, December 10, 1904.J. A. CHASSÉ,  
*Laor Clerk.*



LIST  
OF SOME OF THE  
ACTS OF PARLIAMENT  
PASSED AT THE SESSION OF 1904  
HAVING REFERENCE TO THE  
DEPARTMENT OF PUBLIC WORKS OR WORKS UNDER ITS CHARGE





LIST of some of the Public Acts of the Parliament of Canada, passed at the Fourth Session of the Ninth Parliament, closed by Prorogation on August 10, 1904, and having reference to the Public Works Department or works under its charge (4 Edward VII).

Subject.	Full Title of the Statute.	Chapter.	Page in Statute Book.
Sums granted to His Majesty for the financial years ending June 30, 1904, and June 30, 1905, and the purposes for which they are granted.	An Act for granting to His Majesty certain sums of money for the public service of the financial years ending respectively June 30, 1904, and June 30, 1905.....	2	37
Respecting tolls to be levied by Company.	An Act to incorporate the Thompson River Improvement Company.....	130	261

N.B.—By Proclamation dated March 12, 1904, the Culbute Canal on the Ottawa River and locks, dams and other works associated therewith were declared to be abandoned as public works of Canada.

*Vide Canada Gazette*, Vol. XXXVII, p. 2115.

J. A. CHASSÉ,  
*Law Clerk.*

DEPARTMENT OF PUBLIC WORKS.

OTTAWA, December 10, 1904.



# NATIONAL ART GALLERY

---

## CURATOR'S REPORT

FOR THE FISCAL YEAR ENDED JUNE 30, 1904.



## NATIONAL ART GALLERY.

OTTAWA, November 24, 1904.

FRED. GÉLINAS, Esq.,

Secretary, Department of Public Works,  
Ottawa.

SIR,—I have the honour to report that the following pictures have been purchased by the government from A. Suzor Coté, Esq., for the National Art Gallery of Canada, during the fiscal year ended June, 1904:—

‘Retour des Champs.’

‘Maree Montante.’

‘Scene d’Automne (soir).’

for the sum of twelve hundred dollars (\$1,200), one hundred and fifty dollars (150) and one hundred and twenty-five dollars (\$125), respectively.

During the year, fourteen thousand nine hundred and sixty-six (14,966) visitors registered.

I have the honour to be, sir,

Your obedient servant,

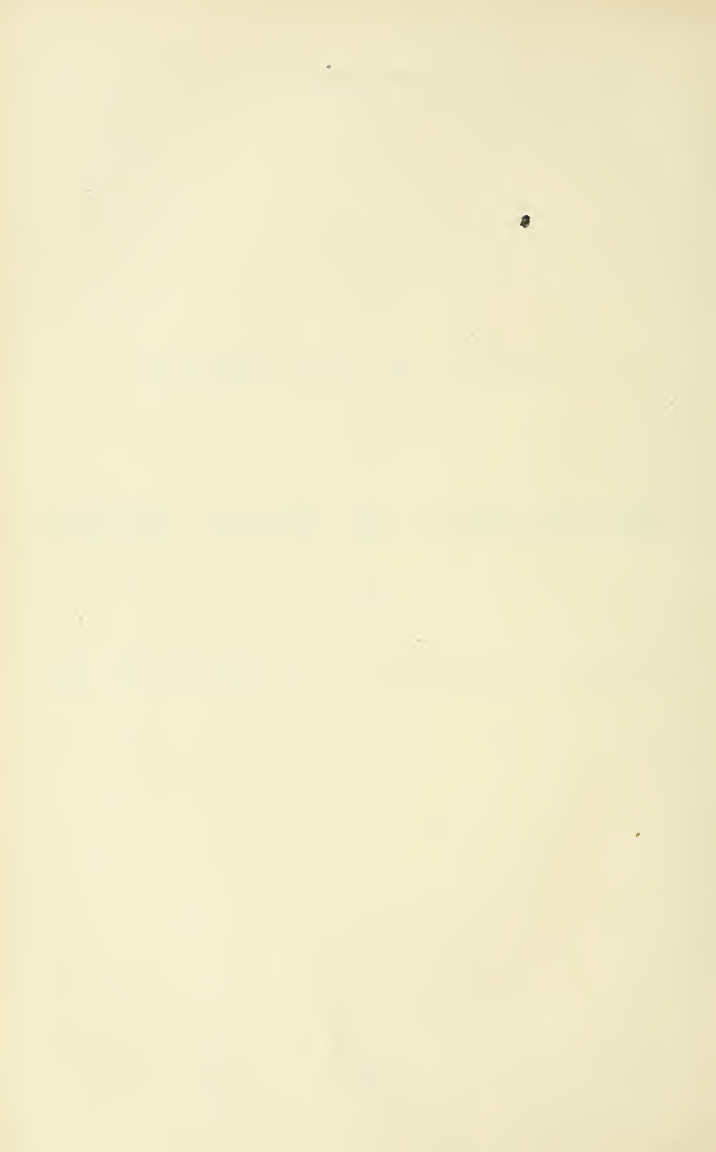
L. FENNINGS TAYLOR,

*Curator, National Art Gallery.*



NAMES OF THE CHIEF OFFICERS  
OF THE  
DEPARTMENT OF PUBLIC WORKS  
WITH  
DATES OF APPOINTMENT, ETC., FROM 1841 TO 1904





# NAMES OF THE CHIEF OFFICERS.

The names with the dates of the appointment, &c., of the principal Officials of the Department of Public Works, from 1841 to 1904.

Names.	Capacity or Office.	Date of Appointment.			
		Served			
		From		To	
<i>Under Statute 4-5 Vic., Cap. 38.</i>					
CORPORATION BOARD OF WORKS.					
Killaly, Hon. H. H	Chairman				
Daly, Hon. D.	Members	Dec.	29, 1841	Oct.	3, 1844
Harrison, S. B					
Sullivan, R. B					
Davidson, J., Esq.					
Begly, Thomas A	Secretary	Aug.	17, 1841		
Keefer, Samuel	Chief Engineer	"	17, 1841		
Rubidge, F. B.	Architect and Assistant Chief Engineer	Dec.	15, 1841		
NEW BOARD OF WORKS.					
Killaly, Hon. H. H	Chairman				
Daly, Hon. D	Members	Oct.	4, 1844	June	8, 1846
Draper, Hon. W. H.					
Morris, Hon. W.					
Papineau, Hon. D. B.					
<i>Under Statute 9th Vic., Cap. 37, &amp;c.</i>					
Robinson, Hon. W. B	Chief Commissioner	June	22, 1846	March	10, 1848
Taché, Hon. E. P.	"	March	11, 1848	Nov.	26, 1849
Chabot, Hon. J.	"	Dec.	13, 1849	March	31, 1850
Merritt, Hon. W. H.	"	April	8, 1850	Feb.	11, 1851
Bourret, Hon. J.	"	Feb.	12, 1851	Oct.	27, 1851
Young, Hon. John	"	Oct.	28, 1851	Sept.	22, 1852
Chabot, Hon. J.	"	Sept.	23, 1852	Jan.	26, 1855
Lemieux, Hon. F.	"	Jan.	27, 1855	Nov.	25, 1857
Alley, Hon. C.	"	Nov.	26, 1857	Aug.	1, 1858
Holton, Hon. L. H.	"	Aug.	2, 1858	"	6, 1858
Sicotte, Hon. L. V.	"	"	7, 1858	Jan.	10, 1859
Rose, Hon. John	"	Jan.	11, 1859	June	12, 1861
Cauchon, Hon. Jos	Commissioner.	June	13, 1861	May	23, 1862
Tessier, Hon. U. J.		May	24, 1862	"	27, 1863
Drummond, Hon. L. T.		"	28, 1863	July	23, 1863
Laframboise, Hon. M.		July	24, 1863	March	29, 1864
Chapais, J. C.	"	March	30, 1864	June	30, 1867
Casgrain, Hon. Chas. Eus	Second Commissioner.	July	9, 1846	Feb.	29, 1848
Cameron, Hon. M.	Assistant Commissioner.	March	11, 1848	"	1, 1850
Wettenhall, James, Esq.	"	Feb.	2, 1850	April	16, 1850
Bourret, Hon. Jos	"	April	17, 1850	Feb.	11, 1851
Killaly, Hon. H. H	"	Feb.	12, 1851	May	6, 1859
Keefer, Samuel	Deputy Commissioner.	May	6, 1859	March	7, 1864
Trudeau, Toussaint		"	March	8, 1864	May
Begly, Thos. A	Secretary	Feb.	10, 1841	Oct.	31, 1858
Trudeau, Toussaint	"	Dec.	13, 1859	March	7, 1864
Braun, Frederick	"	March	8, 1864	July	1, 1867
Page, John	Chief Engineer	Oct.	31, 1873	Oct.	1, 1879

4-5 EDWARD VII., A. 1905

The names with the dates of the appointment, &c., of the principal Officials of the Department of Public Works, from 1841 to 1904—*Concluded*.

Names.	Capacity or Office.	Date of Appointment.	
		Served From	To
<i>Under Statute 31 Vic., Chap. 12.</i>			
McDougall, Hon. Wm.....	Minister.....	July 1, 1867	Dec. 7, 1869
Langevin, C.B., Hon. Hector L.....	".....	Dec. 8, 1869	Nov. 6, 1873
Mackenzie, Hon. Alexander.....	".....	Nov. 7, 1873	Oct. 16, 1878
Tupper, C. B., K.C.M.G., Sir Charles.....	".....	Oct. 17, 1878	May 19, 1879
Langevin, C.B., K.C.M.G., Sir Hector L.....	".....	May 20, 1879	Aug. 11, 1891
Smith, Hon. Frank.....	Acting Minister.....	Aug. 14, 1891	Jan. 10, 1892
Ouimet, Hon. Joseph Aldric.....	Minister.....	Jan. 11, 1892	April 30, 1896
Desjardins, Hon. Alphonse.....	".....	May 1, 1896	July 12, 1896
Tarte, Hon. J. Israël.....	".....	July 13, 1896	Oct. 21, 1902
Sutherland, Hon. James.....	".....	Nov. 11, 1902	
Trudeau, Toussaint.....	Deputy Minister.....	May 29, 1868	Oct. 1, 1879
Baillairgé, G. F.....	".....	Oct. 4, 1879	Dec. 31, 1890
Gobeil, A.....	".....	Jan. 1, 1891	
Braun, Frederick.....	Secretary.....	July 1, 1867	Sept. 30, 1879
Chapleau, S.....	".....	Oct. 1, 1879	Nov. 4, 1880
Ennis, F. H.....	".....	Nov. 5, 1880	Jan. 13, 1885
Gobeil, A., I. S. O.....	".....	Jan. 23, 1885	Dec. 31, 1890
Roy, E. F. E.....	".....	" 1, 1891	" 31, 1900
Gélinas, Fred.....	".....	June 8, 1901	
McPherson, D. A.....	Assistant Secretary.....	Jan. 18, 1891	April 11, 1893
Desrochers, Rodolphe Charles.....	".....	" 8, 1896	
Page, John.....	Chief Engineer.....	July 1, 1868	Oct. 1, 1879
Perley, H. F.....	".....	Nov. 25, 1880	July 10, 1891
Coste, Louis.....	".....	July 26, 1892	March 18, 1899
Lafleur, E. D.....	Acting Chief Engineer.....	March 18, 1899	
Scott, Thos. S.....	Chief Architect.....	May 26, 1871	Oct. 30, 1881
Fuller, Thomas.....	".....	Oct. 31, 1881	June 30, 1897
Ewart, David, I.S.O.....	".....	Nov. 2, 1897	

NAMES

OF THE

OFFICIALS EMPLOYED ON THE SLIDES AND BOOMS OF CANADA

ON JUNE 30, 1904

WITH

DATES OF APPOINTMENT, SALARIES, ETC.

4-5 EDWARD VII., A. 1905

## OFFICIALS EMPLOYED ON THE SLIDES AND BOOMS.

STATEMENT showing the Names, Dates of Appointment, Salaries, &c., of persons employed on the various Slides and Booms, on June 30, 1904.

Name.	Date of Birth.	Position.	Where employed.	Date of Appointment.	Salary.	Remarks.
<i>Collector of Slide and Boom Dues.</i>					\$ cts.	
E. T. Smith.....	Nov. 26, 1846.	Collector..	Ottawa.....	July 1, 1889.	1,800 00 a year....	Date of first appointment to Crown timber office, Ottawa, June 23, 1864. Clerk in Dept. of Inland Rev., July 1, 1870, to June 30, 1889. Transferred to civil list, with rank of first class clerk, January 5, 1892.
F. X. Gagné.....	Sept. 23, 1839.	Clerk.....	".....	Dec. 16, 1897.	1,003 75	Entered the service Aug. 13, 1889.
James Steen.....	June 17, 1830.	Boatman..	".....	July 12, 1889.	60 00 a month....	Employed during the season of navigation for 8 months each year. Date of first appointment, May 26, 1861. Timber counter, Ottawa, for Dept. of Inland Revenue, Jan. 7, 1884, to June 30, 1889.
J. Brassard.....		".....	".....	March 1, 1901.	60 00	Employed during the season of navigation, for 8 months each year.
<i>Saguenay District.</i>						Saguenay district slides abandoned by authority of O.C., dated Feb. 5, 1896 (No. 168,740).
<i>St. Maurice District.</i>						
L. P. Dallaire.....		Paymaster.	Three Rivers..	May 1, 1898.	65 66 a month	
P. Juneau.....		Boom master.	Grand'More..	May 1, 1902.	50 00	
Jos. Page.....	July 7, 1845.	".....	M'th of St. Maurice.	Dec. 10, 1879.	75 00	
Jos. Dick.....		Asst. boom master.	Three Rivers..	May 19, 1898.	75 00	
Gédéon Rousseau..		Boom master.	Shawenigan Falls.	April 7, 1896.	75 00	
Moïse Masson.....		".....	Grandes Piles.	May 19, 1898.	75 00	
N. Lymburner.....	July 22, 1855.	".....	Shawenigan Falls.	July 1, 1895.	75 00	
A. Paquin.....		".....	Ste. Flore.....	Dec. 1, 1901.	75 00	
<i>Ottawa District.</i>						
G. P. Brophy.....	Feb. 24, 1846.	Superintendent..	Ottawa.....	July 6, 1873.	2,500 00 a year....	<i>Ottawa River Works.</i> In addition to the above officers, &c., there are employed
D. Scott.....	" 15, 1830.	Accountant.	".....	Oct. 1, 1884.	1,500 00	

## SESSIONAL PAPER No. 19

J. C. Scott	June 27, 1865	Measurer	Ottawa	April	1, 1889	3 50 a day	during the running season, one foreman on slide at \$1.50 and one assistant foreman at \$1.25 a day; also 25 to 30 labourers at \$1 to \$1.40 a working day
J. Kent	Jan. 28, 1864	Clerk	"	Aug.	1, 1886	3 25 "	Over-
Wm. Cam	April 22, 1860	Messenger	"	Jan.	1, 1892	1 35 "	sees repairs in winter.
Pierre St. Pierre		Deputy slide master	Carillon	June	1, 1897	1 40 "	Actively employed about 7 months.
D. Noonan	June 17, 1840	Boom master	Gatineau	Mar.	21, 1878	5 00 00 a year	"
J. Soudiere	Nov. 8, 1829	Deputy slide master	Chaudiere	Mar.	1878	2 50 a day	"
P. D. Chene		"	Hull	June	14, 1899	1 50 "	Employed about 6 months.
W. A. Shireff		"	Chats	April	26, 1898	1 50 "	Oversees repairs in winter.
John Harvey	May 22, 1831	Slide master	Amprior	July	12, 1882	2 50 "	Actively employed about 7 months.
Joseph McCrea	Mar. 26, 1869	Boom master	Springtown	May	15, 1880	2 00 00 a year	Employed about 3 months during season of navigation.
Patrick Barry	" 27, 1858	Slide master	High Falls	Mar.	10, 1888	1 50 40 a day	Employed 5 months during season of navigation. Oversees repairs in winter.
Duncan McLaren	Jan. 7, 1860	Deputy slide master	Portage du Fort	Sept.	7, 1881	4 56 25 a year	"
D. Roehon		"	Black River	Mar.	1, 1900	4 80 00 "	"
Wm. Selkirk		"	Lower Petawawa	Jan.	19, 1900	2 00 a day	"
P. O'Connor		"	Upper Petawawa	Mar.	18, 1898	2 00 "	"
Wm. Thompson	May 3, 1843	"	Mountain	Oct.	10, 1879	1 25 "	" 6 mos.
S. Moorhead		"	Calumet	Mar.	1, 1901	1 25 "	" 6 to 7 mos.
John Mullin		"	Conlongue	April	10, 1890	1 50 "	" 4 mos.
H. R. Downey	May 16, 1846	"	Des Jochims	July	1, 1889	3 00 00 "	"
J. F. McGuire		"	Dunsmo	May	1, 1897	2 00 a day	Employed 3 months during season of navigation. Will inspect works when required
J. J. French		"	Crooked Chute		1888	2 00 "	"
A. H. Johnson	Nov. 28, 1889	"	Chenux		1865	2 50 "	Paid during season of navigation, 7 mos.
<i>Newcastle District.</i>							
S. Clegg		Superintendent	Peterborough	Mar.	1, 1901	8 00 00 a year	Receives \$500 a year from Department of Railways and Canals.
G. H. Giroux		Clerk, Supt's office	"	"	1, 1880	4 00 00 "	\$200 a year as lock-master, Dept. R. & C.
W. T. Junkin		Slide master	Fenelon Fall	Nov.	15, 1896	1 00 00 "	Receives \$150 a year from Department of Railways and Canals.
R. T. Hill		"	Buckhorn	July	1, 1891	1 00 00 "	"
Hamilton Johnston		"	Heeley's Falls	"	15, 1892	2 00 00 "	Receives \$240 a year from Department of Railways and Canals.
John Dunwoolie		"	Lakefield	June	20, 1895	1 50 00 "	"
C. Choquette		Boom master	Belœil Station	July	26, 1897	1 00 00 "	"
<i>Burlington Channel</i>							
<i>Saving Bridge.</i>							
Wm. Ousaud		Bridge attendant	Burlington	Sept.	19, 1896	6 00 00 a year	Employed 9 months.
W. Hopkins		assistant	"	July	1, 1902	1 50 a day	"
H. Laupman		"	"	Sept.	8, 1902	1 50 "	"
Jas. Eustice		"	"	"	19, 1896	1 50 "	"

4-5 EDWARD VII., A. 1905.

STATEMENT showing Names, &c., of persons employed on various works—*Concluded.*

Name.	Date of Birth.	Position.	Where employed.	Date of Appointment.	Salary.	Remarks.
<i>Yamaska Lock.</i>						
O. Mineau . . . . .	. . . . .	Lock keeper . . . . .	Yamaska . . . . .	Sept. 1, 1885 . . . . .	% cts.	"
H. Lambert . . . . .	. . . . .	" . . . . .	" . . . . .	July 1, 1897 . . . . .	75 00 a month . . . . . 40 00 " . . . . .	"
<i>Rivière du Lièvre Lock.</i>						
Hugh R. Gorman . . . . .	. . . . .	Lock master . . . . .	Rivière du Lièvre . . . . .	April 15, 1897 . . . . .	180 00 a year . . . . .	Employed 8 months.
Charles Brazeau . . . . .	. . . . .	Labourer . . . . .	" . . . . .	Mar. 3, 1902 . . . . .	35 00 a month . . . . .	
<i>Rivière St. Louis Feeder.</i>						
Julien Monpetit . . . . .	. . . . .	Gate keeper . . . . .	Rivière St. Louis . . . . .	May 11, 1903 . . . . .	10 00 " . . . . .	

JOS. VINCENT.

•

N A M E S

OF

PERSONS EMPLOYED ON THE VARIOUS GRAVING DOCKS

ON JUNE 30, 1904.

WITH

DATES OF APPOINTMENT, SALARIES, ETC.



4-5 EDWARD VII., A. 1905

## GRAVING DOCK EMPLOYEES.

STATEMENT showing the Names, Dates of Appointment, Salaries, &amp;c., of persons employed on the various Graving Docks, June 30, 1901.

Name.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Esquimalt Graving Dock, British Columbia.</i>					
John Devereux.....	Dockmaster	Esquimalt	Sept. 17, 1887	\$ cts.	
John Jeffcott.....	Engineer	"	Jan. 4, 1901	166 68 a month.	
F. N. Jones.....	Assistant engineer	"	" 8, 1901	100 00 "	
A. D. Grievies.....	Carpenter	"	Dec. 1, 1887	80 00 "	
W. Young.....	Labourer	"	"	80 00 "	
J. Stock.....	"	"	"	50 00 "	
Chas Jordan.....	Stoker	"	July 1, 1894	50 00 "	
G. Springer.....	"	"	"	60 00 "	
T. Young.....	Night watchman	"	"	50 00 "	
<i>Levis Graving Dock.</i>					
Alf. Samson.....	Dockmaster	Levis	Feb. 15, 1900	1,300 00 a year.	
W. Macdonald.....	Mechanical engineer	"	June 1, 1888	75 00 a month	
T. Despres.....	Asst. mechanical engineer	"	July 21, 1901	60 00 "	
Narcisse Lemelin.....	Fireman	"	June 1, 1888	40 00 "	
<i>Kingston Graving Dock.</i>					
F. S. Rees.....	Dockmaster	Kingston	April 1, 1897	1,000 00 a year.	
Robert McLeod.....	1st engineer	"	July 1, 1892	75 00 a month	
Wm. Geoghegan.....	Fireman	"	" 1, 1892	45 00 "	
C. Staley.....	Watchman	"	" 1, 1892	45 00 "	

JOS. VINCENT.

LIST  
OF  
ENGINEERS, ENGINEMEN, FIREMEN, AND CARETAKERS  
EMPLOYED IN THE  
PUBLIC BUILDINGS THROUGHOUT THE DOMINION ON JUNE 30, 1904  
DATES OF APPOINTMENT, SALARIES, ETC.

4-5 EDWARD VII., A. 1905

## ENGINEERS AND CARETAKERS, PUBLIC BUILDINGS.

STATEMENT showing the Names, &c., of the Engineers, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on June 30, 1904.

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each Year.	Yearly Salary.
						%		%
Ankerst.	Post office.	J. H. Chapman.	Jan. 1, 1846	Caretaker.	Sept. 1, 1900	33 33	12 months.	400 00
Antigonish.	Public building.	Angus McDonald.	Mar. 1829	"	Feb. 5, 1891	33 33	12 "	400 00
Annapolis.	Post office and custom house.	John McKay.	Oct. 26, 1847	"	April 1, 1891	33 33	12 "	150 00
Archie.	Public building.	A. DeRoche.	"	"	Nov. 23, 1903	12 50	12 "	100 00
Laddeck.	"	D. F. McKenzie.	May 20, 1848	"	Jan. 21, 1899	20 83	12 "	250 00
Dartmouth.	"	I. C. Henley.	Dec. 11, 1846	"	May 27, 1894	20 83	12 "	250 00
Digby.	"	F. Demison.	Nov. 5, 1841	"	Mar. 14, 1902	33 33	12 "	400 00
Halifax.	Dominion building.	Richard Power.	Aug. 15, 1834	Engineer.	Oct. 1, 1871	62 50	12 "	750 00
"	"	John Powell.	"	"	"	50 00	8 "	400 00
"	"	J. F. Sullivan.	April 16, 1866	Caretaker.	July 1, 1892	33 33	12 "	400 00
"	"	W. H. Gray.	Nov. 26, 1848	Watchman.	Sept. 10, 1891	39 00	12 "	468 00
"	Drill hall.	John Chowell.	Feb. 26, 1852	Engineer.	Dec. 13, 1901	50 00	8 "	400 00
"	"	R. Harmon.	Dec. 23, 1868	Caretaker.	Mar. 4, 1903	50 00	12 "	600 00
"	Armouries.	R. Morrison.	Mar. 26, 1857	Fireman.	Oct. 1, 1897	37 50	12 "	450 00
"	Examining warehouse.	M. O'Neil.	Dec. 30, 1856	Caretaker.	Feb. 2, 1897	50 00	12 "	600 00
"	Immigrant building.	John Oxley.	April 17, 1856	Fireman.	Nov. 14, 1900	33 33	12 "	400 00
"	Public building.	W. Hiltz.	"	"	June 27, 1900	33 33	12 "	400 00
Kenville.	"	James Clements.	June 5, 1835	"	"	25 00	12 "	300 00
Liverpool.	"	J. E. Hobb.	Nov. 3, 1833	"	Oct. 3, 1901	33 33	12 "	400 00
Lunenburg.	Post office.	J. A. Mutch.	Dec. 13, 1840	"	"	33 33	12 "	400 00
New Glasgow.	Public building.	Alex. Green.	July 16, 1825	"	Dec. 20, 1896	41 66	12 "	500 00
North Sydney.	Post office and custom house.	Jas. Arbutnot.	Feb. 18, 1836	"	"	33 33	12 "	400 00
Pictou.	Post office.	J. A. Watt.	Sept. 5, 1849	"	Jan. 13, 1904	33 33	12 "	400 00
Springhill.	Post office.	Mrs. M. Keefe.	"	"	April 1, 1897	33 33	12 "	400 00
Sydney South.	Post office and custom house.	Alex. P. Smith.	Mar. 17, 1837	"	Feb. 13, 1899	33 33	12 "	400 00
Toro.	"	"	Nov. 16, 1841	"	Mar. 1, 1900	33 33	12 "	400 00
Windsor.	Public building.	W. H. Whallon.	Dec. 23, 1841	"	April 3, 1894	33 33	12 "	400 00
Yarmouth.	Dominion building.	Wm. J. Fraser.	Jan. 1, 1836	" & engineer	Jan. 19, 1875	41 67	12 "	500 00
Charlottetown.	"	Geo. Walker.	Aug. 28, 1826	Messenger	Jan. 24, 1898	41 67	12 "	500 00
"	"	"	"	"	Nov. 1, 1896	45 00	12 "	540 00
"	"	"	Mar. 12, 1856	Watchman.	May 1, 1904	13 33	12 "	160 00
Montague.	Public building.	M. Peardon.	"	Caretaker.	Sept. 1, 1897	33 33	12 "	400 00
Summerside.	Dominion building.	A. MacSween.	Sept. 25, 1835	"	Jan. 1, 1903	33 33	12 "	400 00
Bathurst.	Post office.	S. P. Achey.	Aug. 18, 1873	"	"	33 33	12 "	400 00



4-5 EDWARD VII., A. 1905

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at the Dominion Public Buildings, &c. — *Continued.*

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each Year.	Yearly Salary.
						\$ cts.		% cts.
Montreal.	"	J. Doherty	Feb. 9, 1865	Fireman	Dec. 15, 1903	15 00	8	350 00
Quebec	Examining warehouse	D. P. Kennedy	Feb. 25, 1871	Engineman	April 1, 1897	75 00	12	900 00
"	"	T. P. McLaughlin	Aug. 15, 1861	Fireman	July 26, 1892	53 33	12	640 00
"	Cullers office.	James O'Neil	Nov. 1, 1848	"	Aug. 1, 1894	45 00	12	540 00
"	Custom office.	John R. Mountain	May 29, 1862	"	Nov. 10, 1888	45 00	12	540 00
"	Gov. Gen's quarters	J. Parent	Feb. 25, 1836	"	Jan. 1, 1902	33 33	12	400 00
"	Post office.	F. J. Roy	July 8, 1838	Caretaker.	Sept. 1, 1897	58 33	12	700 00
"	"	F. J. Cooper	Dec. 14, 1877	Fireman	June 25, 1895	55 00	12	660 00
Perthoria.	Immigration building	E. Roy	Aug. 12, 1864	"	Oct. 1, 1902	25 00	12	300 00
Roberval.	Post office.	J. E. Carboneau	Feb. 7, 1866	Caretaker.	Nov. 20, 1901	25 00	12	300 00
Rimouski.	Public building	A. LePage	July 14, 1869	"	Jan. 1, 1901	12 50	12	150 00
Richmond.	"	H. Desmarais.	Aug. 6, 1848	"	May 7, 1898	25 00	12	300 00
Shorbrook.	Post office.	C. Desève	Jan. 22, 1848	"	April 2, 1898	33 33	12	400 00
Sorel.	"	C. Robitaille	May 25, 1838	"	Sept. 1, 1897	33 33	12	400 00
Saint-Henri.	Public building.	A. C. A. Bissonnette	Nov. 8, 1846	"	Mar. 4, 1895	33 33	12	400 00
Saint-Hyacinthe.	Post office.	F. N. Tétrault	Jan. 31, 1849	"	Aug. 5, 1893	29 16	12	350 00
Saint-Jean.	Public building.	J. Forrant	Oct. 24, 1829	"	April 14, 1897	33 33	12	400 00
Saint-Jérôme.	Custom house.	Ph. Savard	June 3, 1828	"	Sept. 1, 1900	23 00	12	300 00
Trois-Rivières.	Post office.	Ph. Gravelle	Feb. 4, 1840	"	Feb. 1, 1891	33 33	12	400 00
Victoriaville.	Public building	A. Gauthier	Aug. 22, 1835	"	"	33 33	12 months	400 00
Amherstburg.	Post office.	G. Beaudet	Mar. 23, 1839	"	Mar. 3, 1904	6 25	12	75 00
Amont.	"	R. Elliott	Jan. 11, 1862	"	May 7, 1897	33 33	12	400 00
Arnprior.	Public building.	Wm. Moulton	Sept. 12, 1826	"	Jan. 29, 1891	33 33	12	400 00
Brockville.	Post office.	R. B. McCreary	Apr. 24, 1842	"	Mar. 15, 1899	33 33	12	400 00
Brantford.	"	H. Purvis	Mar. 19, 1847	"	Dec. 15, 1900	33 33	12	400 00
Barrie.	"	John Squire	Aug. 26, 1857	"	Oct. 27, 1889	50 00	12	600 00
Belleville.	"	E. Slivigny	June 21, 1840	"	May 1, 1903	41 66	12	500 00
Berlin.	"	S. Haight	Oct. 5, 1840	"	Jan. 24, 1901	50 00	12	600 00
Brampton.	"	J. Clemons	Apr. 17, 1838	"	May 15, 1900	33 33	12	400 00
Carleton Place.	"	James McBride	May 25, 1848	"	Jan. 13, 1892	33 33	12	400 00
Chatham.	"	Jas. E. Hatherly	Nov. 6, 1848	"	May 13, 1885	25 00	12	300 00
Corwall.	"	W. W. Mitchell	May 29, 1861	"	Jan. 7, 1885	41 66	12	500 00
Cayuga.	"	R. Conroy	Dec. 9, 1861	"	April 1, 1897	33 33	12	400 00
Clinton.	"	G. A. Gibson.	Dec. 9, 1861	"	Sept. 3, 1891	4 16	12	50 00
Coleburg.	"	J. Scott	Dec. 9, 1836	"	Feb. 9, 1904	4 16	12	50 00
	"	John Boyd		"	Aug. 1, 1901	33 33	12	400 00

## SESSIONAL PAPER No. 19

Deseronto	"	M. Hart	Jan. 18, 1862	"	July 1, 1903	33 33 12	100 00
Dundas	"	Wm. Graham	Dec. 5, 1853	"	" 1, 1898	1 16 12	50 00
Galt	"	T. Barrett	June 17, 1861	"	Aug. 1, 1902	33 33 12	400 00
Guelph	"	R. McLeod	July 30, 1863	"	May 25, 1901	33 33 12	400 00
Godfrich	"	G. Bissett	April 14, 1851	"	Sept. 10, 1894	33 33 12	400 00
Hamilton	"	Alfred Barnard	Dec. 27, 1847	"	Oct. 1, 1896	50 00 12	600 00
"	"	J. Wigglesworth	Aug. 7, 1863	Fireman	"	50 00 8	400 00
"	"	Thomas Nicholson	Dec. 17, 1857	Engineer	Mar. 2, 1887	50 00 12	600 00
Ingersoll	"	John McDonald	June 30, 1841	Caretaker	Nov. 20, 1900	33 33 12	100 00
Kingston	Ont.	T. Harrison	"	Fireman	"	45 71 7 months	320 00
"	"	F. Forsythe	May 27, 18 4	Engineer	Feb. 1, 1904	50 00 12	600 00
"	"	Wm. F. Hazlett	Oct. 30, 1857	Engineer	Nov. 20, 1900	75 00 12	900 00
"	"	J. Quigley	"	Fireman	June 1, 1903	55 00 12	650 00
"	"	M. Redman	" 2, 1867	"	Jan. 29, 1902	15 00 12	540 00
"	"	L. Cochran	Mar. 1, 1879	Electrician	July 29, 1902	55 00 12	600 00
"	"	Wm. Greer	Sept. 1, 1857	Engineer	Sept. 18, 1888	50 00 12	600 00
"	"	John Price	Oct. 12, 1839	Caretaker	Mar. 16, 1884	33 33 12	100 00
Lindsay	"	Wm. Galbraith	Jan. 6, 1846	Engineer	Jan. 11, 1884	50 00 12	600 00
Napanee	"	Mrs. C. E. Webster	July 12, 1846	Caretaker	Nov. 17, 1893	33 33 12	100 00
Niagara Falls	"	Wm. J. Sheppard	Jan. 4, 1854	"	Oct. 1, 1901	33 33 12	400 00
Orangeville	"	D. McPherson	April 30, 1854	"	Jan. 15, 1897	33 33 12	400 00
Orillia	"	John Frawley	Mar. 14, 1844	"	July 15, 1900	33 33 12	400 00
Paris	"	Saml. Lee	May 17, 1842	"	Nov. 1, 1898	25 00 12	300 00
Peterborough	"	John Irwin	May 17, 1842	"	July 7, 1902	33 33 12	100 00
"	"	Wm. Taylor	Nov. 25, 1839	"	Sept. 8, 1887	25 00 12	300 00
Petrolia	"	H. McNaughton	Nov. 14, 1850	"	Jan. 26, 1899	25 00 12	300 00
Pictou	"	D. Welbanks	Feb. 8, 1850	"	May 1, 1903	33 33 12	400 00
Port Arthur	"	John Whitehead	April 15, 1839	"	April 11, 1902	33 33 12	400 00
Port Colborne	"	Wm. Arnsperg	Sept. 9, 1846	"	Sept. 11, 1893	25 00 12	300 00
Port Hope	"	Levi Reynolds	Feb. 15, 1839	"	June 1, 1888	20 00 12	240 00
Pontbrooke	"	R. Birks	June 4, 1834	"	Nov. 17, 1885	33 33 12	100 00
Prescott	"	Samuel Hamilton	April 6, 1822	"	Oct. 25, 1890	33 33 12	100 00
Rat Portage	"	Mrs. J. Link	May 10, 1850	"	May 1, 1899	33 33 12	400 00
Sarnia	"	J. H. Dyble	Aug. 25, 1860	"	Dec. 7, 1901	33 33 12	400 00
Smith's Falls	"	P. W. Lewis	Aug. 19, 1863	"	Nov. 7, 1903	33 33 12	400 00
Stratford	"	J. P. Murray	July 29, 1855	"	Jan. 8, 1896	25 00 12	300 00
St. Catharines	"	D. C. Holmes	Sept. 30, 1857	Engineer	"	50 00 12	600 00
St. Thomas	"	G. Eaton	May 25, 1857	Caretaker	Sept. 1, 1903	33 33 12	100 00
Strathroy	"	Wm. J. Johnston	Dec. 12, 1840	"	April 1, 1903	33 33 12	400 00
Toronto	"	H. E. Hamilton	April 14, 1838	Foreman, engineer	Oct. 25, 1890	33 33 12	400 00
"	"	G. H. Hallie	Sept. 22, 1852	Fireman	April 10, 1902	100 00 12	1,200 00
"	"	Ed. Switzer	Oct. 16, 1865	"	Jan. 13, 1891	55 00 12	650 00
"	"	Ed. Faragher	"	Host attendant	Nov. 1, 1889	35 00 12	650 00
Examining warehouse	"	James Casgrove	Feb. 10, 1856	Engineer	Aug. 18, 1901	55 00 12	650 00
"	"	Ed. Appleton	Sept. 26, 1864	Fireman	"	70 00 12	840 00
"	"	Alexander Dwy	Sept. 27, 1863	Host attendant	Sept. 23, 1886	60 00 12	720 00
"	"	Wm. Cheney	Dec. 19, 1851	"	Dec. 1, 1887	50 00 12	600 00
"	"	F. Simpson	Jan. 8, 1859	"	Sept. 1, 1903	50 00 12	600 00
"	"	Thos. Jones	Nov. 10, 1853	Watchman	April 1, 1902	50 00 12	600 00

4-5 EDWARD VII., A. 1905

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at the Dominion Public Buildings, &c.—*Concluded.*

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each year.	Yearly Salary.
						£.	s.	d.
Toronto.	Union station.	J. Gornaly.	" 26, 1872	Hoist attendant.	Oct. 17, 1901	50 00	12	600 00
"	"	G. H. Armstrong.	"	Elevatorman.	April 11, 1904	50 00	12	600 00
"	P. O. Station.	James Rae.	April 8, 1885	Caretaker.	Jan. 12, 1904	55 00	12	660 00
"	Post office.	J. Somers.	May 20, 1858	Engineman.	Oct. 9, 1897	50 00	8	400 00
"	"	George Latray.	Mar. 16, 1840	Fireman.	Nov. 1, 1896	55 00	8	440 00
"	"	W. J. Graham.	May 21, 1876	Engineman.	Oct. 11, 1904	45 00	12	540 00
"	Drill hall.	J. C. Davidson.	Oct. 11, 1849	Fireman.	Mar. 25, 1895	50 00	12	600 00
"	"	Richard Byrne.	Aug. 8, 1825	"	Oct. 1, 1898	50 00	12	600 00
"	"	D. Gliona.	13, 1844	"	Aug. 31, 1889	33 33	12	400 00
Trenton.	Public building.	David Allen.	May 26, 1848	Caretaker.	Dec. 24, 1897	50 00	8	400 00
Windsor.	Post office.	L. Belleperche.	Oct. 6, 1841	Caretaker.	Nov. 9, 1880	33 33	12	400 00
"	"	W. Curtis.	Mar. 6, 1841	Caretaker.	Jan. 21, 1902	50 00	8	400 00
"	Drill hall.	Peter Smith.	Aug. 14, 1838	Engineman.	Nov. 1, 1897	33 33	12	400 00
"	Public building.	T. Gibson.	June 6, 1864	"	Dec. 11, 1901	33 33	12	400 00
"	"	Robert Kerr.	Mar. 30, 1843	"	Aug. 1, 1897	50 00	12	600 00
Warkenton.	"	T. Giles.	"	"	July 1, 1904	33 33	12	400 00
Woodstock.	"	J. S. Telfer.	May 1, 1843	Engineman.	Jan. 21, 1900	75 00	12	900 00
Brandon.	Post office.	J. D. McDougall.	" 6, 1879	Fireman.	Nov. 13, 1900	55 00	12	660 00
Portage la Prairie.	"	John Mikulezky.	" 10, 1843	Hoist attendant.	Mar. 16, 1887	35 00	12	420 00
Winnipeg.	"	Joseph Court.	April 11, 1853	Watchman.	June 7, 1892	35 00	12	420 00
"	"	Joseph Gagnier.	Oct. 15, 1837	Fireman.	Dec. 12, 1900	45 00	8	360 00
"	"	J. G. Russell.	Mar. 8, 1845	Caretaker.	Jan. 24, 1891	45 00	12	540 00
Calgary.	Custom-house.	E. N. Brown.	May 21, 1841	"	Dec. 1, 1903	45 00	12	540 00
"	Public building.	J. B. Mitchell.	Sept. 19, 1859	"	Oct. 1, 1904	41 66	12	500 00
"	Court-house.	Alex. Deans.	July 7, 1859	"	June 21, 1894	33 33	12	400 00
Canaduff.	Land and registry office.	R. Wythe.	Aug. 4, 1854	"	April 7, 1903	45 00	12	540 00
Edmonton.	Court-house.	L. Brunelle.	Jan. 6, 1848	"	Mar. 1, 1901	45 00	12	540 00
"	Court-house & C. house.	Mrs. E. Hodder.	July 21, 1865	"	April 29, 1897	50 00	12	600 00
"	"	J. C. Jupp.	June 21, 1827	"	Nov. 1, 1893	33 33	12	400 00
"	"	R. Spald.	Jan. 24, 1841	"	" 21, 1893	55 00	12	660 00
"	"	John Ryan.	"	"	" 1, 1900	45 00	12	540 00
"	"	J. H. G. Bray.	Jan. 24, 1841	"	Jan. 7, 1904	33 33	12	400 00
"	Land and registry office.	Mrs. G. Cassie.	Mar. 24, 1840	"	Aug. 1, 1889	50 00	12	600 00
"	Court-house & C. house.	P. McAra.	Dec. 9, 1840	Fireman.	Oct. 3, 1898	40 00	8	320 00
"	"	Jas. McLachlan.	July 22, 1863	Caretaker.	May 6, 1901	45 00	12	540 00
"	Land office.	W. J. Gorr.	"	"	"	45 00	12	540 00

SESSIONAL PAPER No. 19

Walseley .....	"	Court-house .....	W. Hare .....	Dec. 2, 1857	Mar. 1, 1901	45 00 12	"	540 00
Yorkton .....	"	" .....	Geo. Betts .....	Jan. 1, 1851	Feb. 6, 1903	41 66 12	"	500 00
Athin .....	B.C.	Public building .....	J. A. Fraser .....	Dec. 15, 1837	June 26, 1901	12 50 12	"	150 00
Kamloops .....	"	Post office .....	W. Saul .....	Sept. " .....	April 1, 1902	50 00 12	"	600 00
Nanaimo .....	"	Public building .....	J. Thompson .....	Dec. 12, 1836	May " .....	50 00 12	"	600 00
Nelson .....	"	" .....	B. B. Smith .....	" .....	Mar. 7, 1903	50 00 12	"	600 00
New Westminster ..	"	Post office .....	G. D. McMurphy ..	Dec. 21, 1870	Jan. 18, 1901	50 00 12	"	600 00
Rossland .....	"	Public building .....	D. MacKenzie .....	Oct. 14, 1848	April 1, 1903	50 00 12	"	600 00
Vancouver .....	"	" .....	S. Clisholm .....	April 18, 1850	Oct. " .....	50 00 12	"	600 00
" .....	"	" .....	P. Powers .....	Mar. 21, 1836	Feb. 10, 1901	50 00 12	"	600 00
" .....	"	" .....	C. F. Besomworth ..	" .....	July 7, 1904	50 00 12	"	600 00
Victoria .....	"	New Dominion building ..	Wm. McKay .....	Dec. 31, 1857	Feb. 4, 1898	50 00 12	"	600 00
" .....	"	Dominion building .....	A. Johnson .....	May 12, 1858	April 1, 1899	60 00 12	"	720 00
" .....	"	" .....	R. C. Bradley .....	Aug. 13, 1843	Oct. 1, 1903	45 00 8	"	360 00
" .....	"	" .....	J. McMillan .....	July 8, 1876	Nov. 27, 1898	60 00 12	"	720 00
" .....	"	" .....	Geo. Noot .....	Aug. 9, 1845	Oct. 15, 1900	45 00 12	"	540 00
" .....	"	Old Custom-house .....	Geo. Lyall .....	Feb. 12, 1843	May 8, 1900	50 00 12	"	600 00
Dawson .....	Y.T.	Post office .....	J. W. Wilson .....	" .....	Jan. 1, 1902	160 00 12	"	1,920 00
" .....	"	" .....	W. Bishop .....	" .....	May 1, 1901	160 00 12	"	1,920 00
" .....	"	" .....	Mrs. R. Palordis .....	" .....	" .....	150 00 12	"	1,800 00
" .....	"	Government House .....	S. Waldron .....	" .....	Oct. 15, 1901	125 00 12	"	1,500 00
White Horse .....	"	Public building .....	C. J. McLeannan .....	" .....	" .....	100 00 12	"	1,200 00

JOS. VINCENT.





# OFFICIAL CORRESPONDENCE

---

DEPARTMENT OF PUBLIC WORKS

FROM

JULY 1, 1867, TO JUNE 30, 1904



## OFFICIAL CORRESPONDENCE.

LETTERS Received and Sent from July 1, 1867, to June 30, 1904

Year.			Received.	Sent.
1867—From	July 1 to December 31.		2,075	1,511
1868	January 1 to December 31.		3,498	2,317
1869	" "	"	3,448	2,171
1870	" "	"	4,961	3,185
1871	" "	"	6,268	3,983
1872	" "	"	8,333	4,428
1873	" "	"	10,072	5,707
1874	" "	"	9,800	5,043
1875	" "	"	9,006	5,006
1876	" "	"	7,971	4,773
1877	" "	"	7,517	4,425
1878	" "	"	6,886	4,021
1879	" "	to October 6	7,186	4,547
1879	October 7 to December 31		2,033	810
1880	January 1	"	8,451	4,411
1881	" "	"	9,599	5,529
1882	" "	"	10,505	5,699
1883	" "	"	11,633	6,227
1884	" "	"	13,114	6,903
1885	" "	"	8,977	5,321
1886	" "	"	9,644	5,352
1887	" "	to June 30.	4,866	2,735
1887	July 1	1888.	10,493	6,343
1888	" "	1889.	10,522	7,042
1889	" "	1890.	10,098	7,448
1890	" "	1891.	10,576	7,286
1891	" "	1892.	11,637	6,700
1892	" "	1893.	11,720	6,220
1893	" "	1894.	9,517	6,028
1894	" "	1895.	10,190	5,148
1895	" "	1896.	10,223	5,573
1896	" "	1897.	11,404	5,033
1897	" "	1898.	9,640	5,250
1898	" "	1899.	9,639	4,784
1899	" "	1900.	12,139	5,938
1900	" "	1901.	13,179	6,255
1901	" "	1902.	15,880	5,067
1902	" "	1903.	13,140	6,373
1903	" "	1904.	11,300	5,878





